

A COMMODITY SUBSECTOR ANALYSIS  
OF THE  
U.S. CUT FLOWER INDUSTRY

BY  
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by

Marvin Neal Miller



This dissertation is dedicated  
to the author's parents for their  
support and encouragement in  
completing this project.

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A COMMODITY SUBSECTOR ANALYSIS  
OF THE  
U.S. CUT FLOWER INDUSTRY

By

Marvin Neal Miller

August 1983

Chairman: Cecil N. Smith  
Major Department: Food & Resource Economics

This study used a commodity subsector analysis to detail the U.S. cut flower industry. Industry conduct, structure and performance were evaluated in an attempt to discern where the industry is at present and to suggest options for future direction. Ways in which conduct and performance could be improved were outlined, and present and potential problems of the industry were explored.

Following a review of the literature on the commodity subsector analysis methodology, the horticultural characteristics of various cut flower species, as they may affect the marketing of product, were described. Supply considerations were then addressed. Trends have been for fewer domestic growers, each responsible for greater production, and for U.S. supply increasingly becoming partly the responsibility of foreign operators. Colombia accounted for 90 percent of U.S. cut flower imports in 1980; the Dutch and the Israelis are both contributing greater volumes as well.

Consumption patterns were reviewed. Traditional retail florists account for 90 percent of sales dollars, but mass marketers are gaining in importance. Chief occasions for consumption remain funerals and holidays. An analysis of the retail demand for cut flower arrangements suggested an inelastic demand was operating. Due to the assumed inelastic nature of cut flower supply, flexibilities were used in the study of wholesale demand for particular species; inflexible price coefficients were generally found. An examination of commodity price patterns showed prices to peak near holidays; summer months typically account for the price lows.

Market channels for the 30,000 retail florists, 2,000 wholesalers, 3,900 flower farms and other less traditional marketers were delineated. Growers appear to be more concentrated than other groups. Vertical integration is prevalent, as many firms attempt to bypass established middlemen.

Subsector behavior and performance were analyzed. Pricing, value added, profits, product loss, the accuracy with which supply offerings match demand preferences, risk, the competitive environment, conflict and issues causing change were among the topics discussed.

The dissertation concluded with an outlook toward the future characteristics of the subsector, given its pattern of evolution, and a discussion of the present and potential problem areas in the industry.

## CHAPTER I INTRODUCTION

The U.S. cut flower industry has changed considerably over the past several decades; this change continues at a rapid rate today. Modern technologies, coupled with the economic pressures of inflation, rapidly increasing heating and transportation costs and changing supply and demand patterns have transformed the cut flower industry from one where local florists largely depend on nearby growers for supply, to an industry where demand is often satisfied by growers, shippers and wholesalers who supply local florists and/or supermarkets with flowers grown all over the world. The change has indeed been significant. An examination of the industry as it exists today is, therefore, warranted.

### Problem Statement

The cut flower industry has been a constantly evolving segment of the U.S. horticultural trade. Although advances have affected all of horticulture, the cut flower industry has, perhaps, been among the most touched. Scientific advances, in such areas as breeding and crop production (including hybridization, growth hormones, fertilization and pesticides, etc.), coupled with technological advances in greenhouse managerial practices have transformed parts of the industry from home-stead operations manned by family members to large corporations with many hundreds of workers and many acres of production. Economic pressures have further changed the industry as inflation and world

political problems have forced labor and fuel prices to escalate in recent years. As labor and fuel usually constitute the two largest costs of production for the cut flower industry, the effect has often been substantial.

Yet through this adversity, some firms have shown little or no change over the past several decades, this being possible because of various niches being served. Many a community is still being served by a florist who relies almost solely on the production of the greenhouse attached to his shop, or a florist who "employs" his wife as his sole designer.

The diversity of an industry and the absence of a recent cataloging of industry status are, at times, defeating in furthering industry progress. Documentation of the current situation in which an industry is found, and the analysis of that circumstance, often allows for a determination of industry efficiencies and inefficiencies. Furthermore, suggestions of improvements in industry performance are often evident. This, then, is the objective for this analysis of the U.S. cut flower industry.

### Methodology

A commodity subsector analysis is the selected methodology of examination for this research. This approach evaluates industry conduct, structure and performance in an attempt to discern the current state of an industry and to discover probable options for where the industry may be headed in the future. This analysis, subsequently, outlines ways in which industry conduct and performance can be improved and explores present and potential problems of the industry.

A commodity subsector approach ". . . involves analyzing the entire production-distribution system for a commodity. Thus, it involves both horizontal and vertical interactions between the firms and industries which participate in the subsector. In addition, an attempt has been made to explicitly identify changes in the organization or coordination of the various subsectors . . ." [Yuen et al., 1978, p. 1].

Marion [1976a] points out that, when concerned with the organization and performance of a subsector, one is largely involved in analyzing the controlling forces in the subsector and the degree, if any, that control over strategic aspects within the subsector may be changing. Marion further suggests that one needs to be concerned with the effects of alternative patterns of control on subsector performance. Here Marion includes discovery of the extent to which coordination is achieved (i.e., do supply offerings match demand preferences in quantity, quality, timing and location) and analysis of the technical and operational efficiency of the entire subsector, the equity of distribution of returns, right, risks, information and responsibilities, the accessibility of the subsector and ultimately the reliability and stability of subsector performance [Marion, 1976a, p. 1].

Although contemporary commodity subsector analysis methodology has only developed over the last decade, it has already been widely adopted in researching the U.S. food system. Most of the recent work is a result of activities of the North-Central Project 117 (NC-117) Food System Research Group, which is conducting research entitled "Studies of the Organization and Control of the U.S. Food System." From this research committee, a general outline of the recommended procedure to follow when conducting commodity subsector analyses was developed.



This outline was used as the basis for this work, with slight modification to adapt the outline to the cut flower industry.

The already conducted research on commodity subsectors, largely that of the NC-117 Food Systems Research Group, has also generated many hypotheses. Many of these hypotheses can easily be adapted to other industries, including the cut flower industry. These hypotheses, which will be introduced in Chapter II's review of literature as warranted, will be combined with the previously mentioned outline, to guide this commodity subsector analysis. An effort will be made to relate these premises to the U.S. cut flower industry.

There are, however, two distinctions which must be made. First, the cut flower industry is very definitely agricultural in nature although retail florists would, for the most part, question whether or not they are typical agribusinesses. Secondly, some differences from the reported research might be expected, for this research has largely dealt with the food industry. Although flowers are now carried in many supermarkets (very often in the produce section), flowers definitely can be distinguished from food. On the other hand, production methods of flowers, whether they be field grown or raised in greenhouses, are not dissimilar to production methods of other horticultural food crops (whether field or greenhouse grown). It is with these points in mind that the commodity subsector analysis of the U.S. cut flower industry will now be undertaken.

#### Dissertation Organization

After Chapter II's review of literature, Chapter III will continue with a description of the general characteristics of the cut

flower commodities. Chapter IV will discuss domestic production, trade and international markets as they affect the U.S. supply. Chapter V will focus on consumption and will include a presentation on elasticities of demand and commodity price patterns. Chapter VI will then describe the subsector organization. Past and present behavior and performance of the subsector will be analyzed in the seventh chapter, and Chapter VIII will prognosticate the expected future. Chapter IX will deal with present and potential problems in the subsector and will include the outlining of opportunities for improving industry performance. The dissertation will end with a chapter of summary and conclusions.

Appendix A contains this author's initial impressions of the U.S. cut flower industry as garnered from interviews of various operators located throughout the country. Appendix A will be frequently cited as a reference source. Appendix B contains a list of the over 150 persons interviewed and/or firms visited during the author's travels. Appendix C will include data used in the analysis that are not found elsewhere in the dissertation. Appendix D includes updated data from Floriculture Crops not available at the time work was started; as the series has been terminated by the U.S. Department of Agriculture (USDA), the complete data set is herein provided.

## CHAPTER II REVIEW OF LITERATURE

Contemporary commodity subsector analysis research has only developed over the last decade. Yet, it has already been widely adopted in research on the U.S. food system. This work, which has largely been conducted by the North-Central Project 117 (NC-117) Food Systems Research Group as composed of members from 18 Land Grant colleges in cooperation with the U.S. Department of Agriculture (USDA) has, to a large extent, been the developing agent for recent commodity subsector analyses. This research has yielded several papers on various subsectors, as well as a proposed methodology for conducting research; these will be used as a guide in this analysis of the cut flower industry. Hypotheses and general information on subsectors have also been generated by the NC-117 staff; it is this information and pertinent hypotheses that will be reviewed here.

The words structure, conduct and performance, long used in discourses of the industrial organization fields, have permeated the commodity subsector analysis literature. Structure, conduct and performance have been used as the basis for suggested outlines of the analysis procedure by some authors. Henderson [1975], for example, suggests adapting the structure-conduct-performance framework of industrial organization theory to commodity subsector analyses. Marion [1976a, p. 2] supports this notion emphasizing that conduct, which is often neglected by industrial organization writers, in favor of

emphasizing relationships between structure and performance, should not be similarly ignored in subsector analysis. Marion [1976a] states that coordination, one dimension of the conduct variable, is of particular interest in commodity subsector analyses. Hence, conduct needs to be closely examined, along with the structure and performance variables.

Discussion of industry structure almost immediately leads to the topic of market concentration. Although not a prime issue among recent writers specifically assessing various subsectors, market concentration is widely discussed in the literature of industrial organization, considered the parent field of commodity subsector analysis. Here, market concentration is often considered using such means as the Standard Industrial Classification (SIC) Codes (at, for instance, a four-firm concentration level), Bain's Index, consumer surplus, Lorenz curve, etc. The objective is to obtain a measure of conglomerateness, or how near an industry is to either being perfectly competitive or monopolistic. In this sense, the number of buyers and sellers in the industry becomes a point of concern.

Other structure variables would include the degree of product differentiation, the absence or presence of any barriers to entry (or exit) or the potential for such barriers and the cost structures in the industry.

Conduct in industrial organization literature includes many variables relating to firm behavior in marketing and production of firm output. Pricing behavior, product strategy and research and innovation are included among conduct concerns, as are advertising, legal tactics and any other issues relating to how firms accomplish exchange.

Performance is the third industrial organization category to investigate when examining a firm or an industry subsector. Profitability and stability are perhaps the best indicators of firm or industry performance. However, progressiveness (research and development, improved technologies, etc.) and employment (changes or stability) are also important indicators of performance. A firm's or industry's production and allocation efficiency and an industry's distribution (or redistribution over time) of income, equity and responsibilities are also used as indicators of performance.

Discussions of the structure, conduct and performance of the cut flower industry will depend, no doubt, on the segment of the industry and the scope of the segment under discussion. The florists serving a large metropolitan area will find themselves in a much different position than those florists serving small rural communities. The wholesale segment of the industry will have a different structure and different expected conduct and performance than will the retailers, the wire services or the growers. A closer examination of the structure, conduct and performance is called for.

Of the three terms, structure, conduct and performance, conduct has received much of the attention in the definitional literature of subsector analysis. Henderson states that "the subset of conduct variables that appears most relevant to vertical analysis focuses primarily on coordinating activities between buyers and sellers rather than on competing activities among buyers or sellers" [1975, p. 6]. Henderson [1975, p. 8] further suggests that coordinating practices (from least to most specific) include (a) spot transactions, (b) contracts consummated after the production decision has been made, (c) contracts consummated

prior to the production decision and (d) vertical integration through common ownership.

Henderson [1975] suggested the following hypotheses:<sup>1</sup>

- H1: As the absolute number of buyers or sellers or both declines in two vertically tangent stages of a market, the types of coordinating practices used move away from spot-type transactions toward increasingly specific agreements.
- H2: The greater the number of parallel channels that exist in a vertical market structure, the greater the array and range of coordinating practices used.
- H3: The greater the number of intermediate units that exist in a vertical channel (or the longer the channel), the greater the use of coordinating practices toward the spot transaction end of the range.
- H4: The greater the perishability of product, the greater the use of coordinating practices toward the administrative, or highly specific agreement, end of the range.
- H5: The greater the number of intermediate units that exist in a vertical channel, the greater the technical inefficiencies in the channel.
- H6: The further that the coordinating practice moves away from the spot-type transaction and toward a highly specific agreement, the greater the technical efficiencies that result.
- H7: The further that the coordinating practice moves away from the spot-type transaction, the greater the allocative accuracy in both quantitative and qualitative terms.
- H8: The further the coordinating practice moves toward the administrative, highly specific agreement, the slower the rate of change and adoption of new practices, technology and product forms by market participants.
- H9: The greater the array or range of coordinating practices that are evidenced in a market, the greater the range in the degree to which equity obtains in that market.

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<sup>1</sup>All hypotheses throughout the dissertation will be numbered as Hi for reference later in the text.

H10: The further that the coordinating practices move away from the spot-type transaction, the smaller the variance in equity that obtains over time.<sup>2</sup>

Analysis of industry marketing channels will determine the applicability of Henderson's hypotheses to the floriculture subsector. Whereas, the industry is largely oriented towards spot transactions (involving growers, wholesalers and retailers) and vertically integrated firms (such as florists who raise their own flower crops in their greenhouse-flower shops), the industry also has experimented with contract negotiated crops in recent years. These contracted crops, with contracts being consummated both before and after the production decisions are made, have largely been spurred by the mass marketers, who have long used contracts in negotiating much of their merchandise. In any case, it can be said that the floriculture industry of today exhibits all four of Henderson's coordinating practices somewhere in the subsector.

Structure, conduct and performance, although each defined differently, are definitely interrelated in the literature as well as in practice. Marion, for instance, uses the term coordination to describe ". . . the process of harmonizing the functions of a subsector, i.e., as conduct" [1976a, pp. 7-8]. Marion continues, "The result of good coordination is a match between seller offerings and buyer preferences" [1976a, p. 8]. This "harmonizing process" is, however, used by Henderson [1975, p. 10] to describe allocative accuracy, which he includes in a list with technical efficiency, progressiveness and equity considerations as the determinants of market performance.

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<sup>2</sup>Hypotheses H1 to H10 are taken verbatim from Henderson [1975, pp. 12-13].

Yet, Henderson emphasizes the relationship between allocative accuracy and vertical coordination. It is through this allocative accuracy definition as used by Henderson, that one begins to note the cohesiveness of the structure-conduct-performance paradigm. Henderson states that

. . . allocative accuracy refers to "goodness" of the match between what sellers want to or do sell and what buyers want to or do buy. As such, this may be the singularly most important performance dimension associated with vertical coordination. This has both quantitative and qualitative dimensions. [1975, p. 10]

Parker [1976, p. 21] shares with Henderson the role of relating conduct to performance variables. Parker states that the implication of complacent conduct is that higher present and even higher future costs will result due to a lack of progressiveness, that characteristic being one of Henderson's performance criteria. This lack of progressiveness results from a lack of pressure on companies for innovating according to Parker.

Marion [1976a] probably does the most to tie the structure-conduct-performance framework together. Marion relates the structure-conduct-performance paradigm to what he calls the technological determinism, behavioral and institutional schools.

Technological determinism, according to Marion, "concentrates on the design of systems from a logistics-production economics point of view" [1976a, p. 2]. Technological determinism "tends to focus on the reasons for changes in subsector structure, particularly integration and disintegration. Structural changes are attributed largely to technical efficiency and/or risk sharing incentives" [Marion, 1976a, pp. 2-4].



The behavioral school emphasizes how the system functions, stressing the conduct affecting inter-firm vertical relationships. Marion tells of the cybernetic feedback-control approach, which places emphasis on the relationship between decision rules, delays and decision points, and performance in matching supply and demand. A second behavioral approach is the conflict-cooperation approach, which places "emphasis on behavioral analysis of conflict, cooperation, and power in vertical channels, their effects on the coordination process, and on matching S and D [supply and demand]" [Marion, 1976a, p. 4]. Finally, Marion tells of the market failure approach of the behavioral school. This approach "focuses on the causes of subsector structural change, particularly vertical integration" [1976a, p. 5].

A final conceptual school, the institutional school, emphasizes the market structure, coordination-adaptation and legal-institutional approaches to concentrate on structure-performance relationships. In the market structure approach, focus is directed to the effects of vertical structure on industry structure, conduct and performance. The institutional structure of systems, the structural evolution of the system and the coordination and adaptation of the system are emphasized in the coordination-adaptation approach, which considers the entire subsector. Technical efficiency, adaptability, allocative accuracy and distribution of rights, returns and risk are the performance dimensions considered in the coordination-adaptation approach. The legal-institutional approach is the last conceptual school approach discussed by Marion [1976a, pp. 5-6]. Laws, institutional arrangements and equitable distribution of rights, risks and returns (relative to investments of various participants) are the concerns here.

Marion also offers what he calls an "iso-coordination" curve. The curve, which is presented almost in the form of a hypothesis (and is indeed, subsequently referred to as such), suggests "that the degree of coordination achieved (S-D match) is a function of the technology of coordination (how much can supply be regulated re: quantity, quality, timing and location and how much can demand be influenced) and the dispersion of control" [Marion, 1976a, p. 8]. Curves convex with respect to the origin, ranging from low to high levels of coordination, are diagrammed on a graph, the axes of which are technology of coordination (low to high levels beginning at the origin) and dispersion of control (disperse at the origin and concentrated levels at the upper bounds). Marion [1976a, pp. 8-9] points out that the technology of coordination includes factors affecting the ease with which seller offerings and buyer performances are synchronized throughout the subsector. Thus, similar firm size, similar firm location, agreed on product characteristics, parallel seasonality patterns, ability to store products, favorable weather patterns, etc., all would favorably affect the technology of coordination level. Hence, Marion's iso-coordination curve "hypothesis" will now be added to the list of formal hypotheses, as follows:

- H11: The degree of coordination achieved (S-D match) is a function of the technology of coordination and the dispersion of control, with greater coordination resulting from higher technology of coordination and more concentrated control of the subsector.

Improved communications between growers, wholesalers and florists have definitely led to greater supply and demand matches. Several wire service groups and local allied florist groups have made it a practice, in recent years, to inform growers of flower needs for upcoming

promotions where heavier than usual needs of specific species will be needed. Supermarkets, to a large extent, have followed this practice in holiday ordering of potted blooming plants for many years. Furthermore, recent efforts by the wire services at computerization of their transactions have definitely resulted in greater synchronization in the subsector, with even greater potential synchronization possible in the future.

In an earlier paper, Marion [1976b], in discussing vertical coordination and exchange arrangements, pointed out that "where several vertically related entities within a subsector are linked by markets, the 'market prices' are assumed to provide coordination of productive endeavors by the incentives or disincentives they represent" [1976b, p. 179]. Marion pointed out that coordination should be differentiated, as a process, from the mechanisms that influence that process. The process of vertical coordination, according to Marion, is the way(s) the various functions of a vertical value adding system are brought into harmony, regarding the what, when, where and how (which resources are used) goods are produced and marketed, and the adjusting and adapting procedures needed to respond promptly to changes in demand, new technology or other shifts in profit incentives [Marion, 1976b, p. 180].

Coordinating mechanisms, on the other hand, include the facilitating methods of the marketing process. Markets of all types, private treaties, vertical ownership, cooperatives, bargaining associations, market orders, information systems (including grades and standards), transportation services, credit services, government and trade programs and practices all are considered coordinating mechanisms by Marion

[1976b, pp. 180-181]. Marion points out that coordinating mechanisms can influence the "coordinating decisions environment" by (a) incentives, (b) information flow, (c) adequacy of necessary inputs to be able to respond to incentives and (d) management alertness and ability [Marion, 1976b, p. 182].

Marion ends his article by listing several hypotheses for which he purports no accuracy; he instead suggests the hypotheses may offer only a supply of thought provoking material. The hypotheses are, nevertheless, added to the previous hypotheses list as the following:

- H12: Technical efficiency in multi-stage segments of sub-sectors increase as the linkages between these stages approach vertical integration.

Ancillary Hypothesis: Vertical integration and contracts which transfer substantial control tend accelerate the adoption of new technology, improve quality standardization, improve the scheduling of product flow, and stabilize facility utilization.

- H13: Technical efficiency at any stage in a subsector generally increases as the size and specialization of the enterprise increases. With increasing specialization, however, comes increased risk and often increased financial investments. Where risks are substantial, increases in firm specialization will be inhibited unless enterprise sharing arrangements (public or private) are available to allow sharing of risks.

Ancillary Hypotheses:

- a. Increased specialization results in reduced flexibility. The desired level of specialization, therefore, depends upon the rate of change in subsector demand and supply. With rapid change, flexibility is more important to firm and subsector performance than technical efficiency.
- b. Since increased specialization reduces a firm's alternatives, it also tends to erode its bargaining power and makes it more vulnerable to exploitation and inequitable distribution of risk, responsibilities and returns.

- H14: When compared to a loosely coordinated subsector, a tightly coordinated subsector experiences lower total cost per unit of output, reduced levels of risk, lower prices to consumers, greater output, and lower total profits per unit.
- H15: Coordination of supply and demand is a function of pricing accuracy, information flow, cooperation between subsector members, and influence over demand.

Ancillary Hypotheses:

- a. Processing and distribution firms are in the best position to coordinate food subsectors due to their access to information on consumer preferences and their ability to influence demand.
  - b. System linkages that transfer control forward in a subsector and which are relatively long in duration increase the amount of information communicated to and the market responsiveness of producers.
  - c. Cooperation in a subsector is a function of consistency of firm goals, equality of bargaining power and level of information.
  - d. The larger the number of stages and the more geographically dispersed, the more difficult the communication of accurate information through the subsector. Communication is improved as intermediaries are eliminated and firms at different stages deal more directly with each other.
- H16: Synchronizing of supply and demand is improved when one stage in a subsector has significant control over supply.

Ancillary Hypotheses:

- a. Coordination of supply and demand improves as the concentration of the dominant stage in a subsector increases.
- b. Commodities in which marketing orders allow for supply management and allocation enjoy better coordination than similar commodities without marketing orders or with marketing orders that concentrate on influencing demand.

- H17: Internal coordination (vertical integration) encounters some of the same problems as market coordination. Where markets are technically and allocatively efficient and free from manipulation, where grades and standards are adequate and where sufficient information is available, market coordination will be equivalent or superior to internal coordination.

Ancillary Hypothesis: In large part, vertical integration and control transferring contracts result from the failures of existing markets.

- H18: The benefits from increased coordination increase with the perishability of products, the importance of careful scheduling between stages and the importance of quality specification.
- H19: Adaptability of subsector is a function of the ratio of cooperation to conflict, degree of market coordination, rate of growth of demand for output, sparseness of government guarantees/controls and the equality of power between different stages in subsector.

Ancillary Hypothesis: For commodities where government farm programs provide price stability and an assured market, producers are relatively insensitive to changes in demand.

- H20: The equity with which rights, responsibilities and returns are distributed among subsector participants is a function of the equality of bargaining power between subsector dyads and historical patterns of property right distribution.
- H21: Large firms enjoy advantages over small firms in contracting or vertical integration. Contracts with large contractees are more economical to administer. Large contractors are better able to absorb the risk and administrative burden of vertical integration or control transferring contracts. Thus these modes of exchange tend to stimulate increased concentration.
- H22: Vertical integration or contracts which substantially alter control increase the barriers to entry into the integrator or contractor industry. Contracts which reduce the level of risk in the contracting industry may reduce the barriers to entry into that industry, however. The rate of entry/exit into the contracting industry following the adoption of contracts should indicate the perceived desirability of the risk-returns-freedom trade-offs.

- H23: Vertical integration or disintegration activity (or variants thereof) is positively related to the rate of growth or decline of commodities and the rate of technical change. That is, a subsector experiencing little growth or decline, and few technical changes would be expected to be organizationally stable.
- H24: The primary goal of firms in contracting for the sale of their output is to reduce market and price uncertainties. Their interest in contracting is positively related to their level of specialization and past variability of product prices, and negatively related to current price levels.
- H25: The primary goal of firms in contracting for input supply is to gain sufficient control over quantity, quality, and the delivery schedule of inputs to assure efficient plant operations and the ability to satisfy market demands.
- H26: The incentives to contract are greatest for buyers when inadequate supply is available, and greatest for sellers when surplus supply exists and markets are glutted. Hence, there is a natural conflict of interest which encourages breaking contract commitments.
- H27: In most subsectors, firms at different stages have conflicting goals, do not accurately understand the goals and preferences of firms at the other stages, and are not "system oriented." Hence, conflict is more prevalent than cooperation.<sup>3</sup>

Marion's [1976b, 191-193] hypotheses emphasize the importance of coordination to a subsector. Although absolute proof of some of the hypotheses may be lacking, many of these will be supported by observation of the cut flower industry, as the analysis will show. Geographically dispersed stages of a subsector, perishability of product, variability in size of subsector participants, advantages of contracting and its effect on the subsector, and existence of contrasting goals within the subsector are all mentioned by Marion in these hypotheses. These characteristics most certainly apply to the cut

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<sup>3</sup>Hypotheses H12 to H27 are taken verbatim from Marion [1976b, pp. 191-193].



flower industry and will allow these hypotheses to be addressed as they pertain to the subsector.

Yuen et al. [1978] suggest the following hypotheses concerning coordination and structure; these are now added to the hypotheses list:

H28: Producer collective action to coordinate production and marketing will occur under the following structural conditions:

- a) Production of the commodity is highly geographically concentrated;
- b) Producers are typically highly specialized or highly dependent on the commodity as their major income stream;
- c) Limited flexibility of resource use in the short run typifies the farm production stage (Human Capital and Fixed Assets);
- d) Growers face a limited number of alternative buyers for the raw commodity or there is threat of buyer exit;
- e) The raw product is highly perishable; and
- f) There are perceived inequities in risks, responsibilities, and returns between producers and buyers.

H29: High levels of coordination on product quality and timing between two stages of a subsector do not insure that overall subsector vertical and horizontal coordination will be achieved. Further in those cases where vertical coordination is high throughout the subsector, horizontal coordination may not be achieved.

H30: Vertical coordination mechanisms currently in use in agricultural subsectors are short-run oriented, focused primarily on interaction between two stages, and sufficiently devoid of horizontal control to facilitate long run resource adjustments.

H31: Backward vertical integration will be used only when there are

- a) Unstable supply of product within desired specifications;
- b) An inability to secure product through alternative sources;



- c) An inordinate profit rate for suppliers;
- d) A volatile price structure for inputs avoidable if the buyer runs the assets for self supply;
- e) Compatability of production operation and management with current enterprises, and
- f) High technical complementarity between enterprises.

H32: Forward vertical integration will be used only when there are

- a) Unstable market outlets (price and availability);
- b) An inability to effectively market products through currently available outlets;
- c) An inordinate profit rate for buyers;
- d) Compatibility of production operation and management with current enterprises; and
- e) High technical complementarity between enterprises.

H33: Production contracts will occur where there is a need for close technical coordination between adjacent production stages which would be conducive to vertical integration except that

- a) Capital requirements, management constraints or limited returns discourage joint ownership of adjacent stages;
- b) Risk of the joint enterprises would make ownership prohibitive for a single firm;
- c) Legal restraints prevent joint ownership; and
- d) Optimal plant sizes are compatible at adjacent stages for combined ownership.

H34: Coordination between processors and retailers for unbranded products tends to be based on frequent contract with the evolution of standard working arrangements which may infrequently be specified through formal contracts. This is especially true for perishable products.

H35: Coordination between processors and retailers for branded products is controlled by the brand franchise holder. The access of brand franchise holders to a variety of merchandising strategies allows them to control product quality and influence product movement.

Corollary: Private label coordination is predominantly controlled by retailers through pricing and merchandising strategies. Private label processors only have the ability to influence wholesale price.

H36: Development of vertical coordination mechanisms which contain multiple product specifications may improve communication between stages but increase the complexity of collecting and disseminating information. As these mechanisms increase in importance the prices reported for more standardized exchange terms such as those at terminal markets become less representative of trading. This contributes to the problem of "thin markets" and may add to the incentive to develop alternative coordination mechanism.

H37: In markets where vertical integration, production contracts and formula price contracts become predominant, there is increasing price volatility and greater potential for price distortion or manipulation in the residual spot market.

H38: In the presence of strong oligopsony at manufacturing or retailing and strong horizontal control by growers, intermediate processors will be squeezed. Thus growers may be forced to integrate into processing to maintain market outlets.<sup>4</sup>

Although most of the work on commodity subsector analysis has been done in the last decade via the NC-117 Food System Research Group, there was a period in the late 1950s and early 1960s during which much work was done on vertical coordination. The work of this earlier period was perhaps best summarized in a USDA publication entitled "Vertical Coordination in Agriculture." Authors Mighell and Jones define vertical coordination as ". . . the general term that includes all the ways of

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<sup>4</sup>Hypotheses H28 to H38 are taken verbatim for Yuen et al. [1978, pp. 13-16].

harmonizing the vertical stages of production and marketing. The market-price system, vertical integration, contracting, and cooperation singly or in combination are some of the alternative means of coordination" [1963, p. 1]. Mighell and Jones continue to explain that vertical coordination would include all of the ways in which vertical stages of production are "controlled and directed." This, they say,

leads to an obvious dichotomy of integrated and non-integrated kinds of coordination. Coordination of stages takes place both within and between firms. Internal coordination is controlled by the firm's own administrative structure; external coordination is carried on between firms through the functioning of the pricing system and market structures. [Mighell and Jones, 1963, p. 10]

They continue by pointing out that ". . . integration (either vertical or horizontal) is brought about by the same forces of industrial evolution that lead to specialization" [Mighell and Jones, 1963, p. 10]. Economic change and progress are themselves a result of the continuing specialization and integrating process. They continue, "the adoption of any new item of technology, and improved practice, disturbs the existing equilibrium of economic forces and leads to a different pattern of vertical and horizontal integration" [Mighell and Jones, 1963, p. 10].

Mighell and Jones use a chapter of their report to discuss the economic theory of efficiency and coordination. They point out that efficiency, as achieved in production where the isoquants fall tangent to the budget line to yield the expansion path, is similarly represented for optimum plant size on a graph (whose axes are cost and output) by the point where the long run average cost curve is at its minimum. This point, the long run minimum-optimum, represents the efficient size [Mighell and Jones, 1963, pp. 19-23].

Mighell and Jones point out that, in addition to the gains in efficiency achieved by choosing to operate a plant at this long run minimum (optimum) point, further cost reductions might be achieved from the operation of several (identical) plants at this point. Possible exploitation of purchasing and distribution economies of scale or management proficiencies are examples of where even further cost abatements might be realized. It should be emphasized, however, that as with too large a plant, the opportunities for a firm to lower unit costs by increasing numbers of plants will cease at some finite size of the operation [Mighell and Jones, 1963, p. 23]. This may explain some of the problems that several larger multi-shop florists have had with continuing expansions; diseconomies of scale often set in, instead of the expected continued economies of scale being realized.

Campbell and Clevenger [1975] seem to echo Mighell and Jones over 10 years later. They suggest that "an institutional approach to vertical coordination is a way of looking at problems of organization of a vertical production system. It focuses attention on transactions and transactions systems. It calls to attention problems in organizing a system toward a set of objectives" [Campbell and Clevenger, 1975, p. 13].

Marion [1976b, pp. 186-187], in writing about structure and performance, tells of a market structure conceptual framework in which he places emphasis on the impact of changes in vertical organization on the nature and effectiveness of competition. The consequences of integration are said to be represented best by two contrasting points of view, one associated with the University of Chicago, and the second

associated with Bain, Scherer, Mueller and Helmberger [Marion, 1976b, pp. 186-187].

The University of Chicago opinion is based on two models. Results of the first model suggest that upon integrating a perfectly competitive industry with an industry controlled by a single-firm monopolist, the monopolist will have a profit motive for integrating only when economies of scale result from vertically integrating the operations. In the second model, successive monopolies of vertically related industries integrate, with consumers being better off than when each industry is controlled by a single monopolist. Output increases while prices decline. Proponents of the University of Chicago perspective encourage vertical integration because they say results of integration either have no effect on, or actually promote competition, increase efficiency or are undertaken by firms for faulty and, therefore, completely irrational reasons [Marion, 1976b, pp. 186-187].

The second view, that of writers such as Bain, Scherer, Mueller and Helmberger, is that vertically integrating firms usually are firms lying between perfect competition and monopoly. As such, they say, it is incorrect to talk about the results of integrating a monopolist with a perfect competitor or with another monopolist, when typically integrating firms are actually somewhere along the oligopolistic continuum between perfect competition and monopoly. Entry barriers, discriminatory pricing and other pressures can be motives for integrating. Examination of the structure of the markets of the integrating firms is essential to determine the effects of mergers on future structure and conduct [Marion, 1976b, p. 187].

Marion summarizes existing literature by suggesting four concerns relating to changing vertical structures. Marion cites the effects on (a) technical efficiency; (b) vertical coordination (including pricing efficiency, information availability, firm adaptability, supply matching demand, etc.); (c) distribution of rights, responsibilities and returns; and (d) competition as the issues of concern when considering various vertical arrangements [Marion, 1976b, pp. 187-188].

Parker [1976] suggests the importance of market concentration in evaluating structure. He states that

the best single, generally available measure for evaluating competitiveness of industries is the level of market concentration. The degree of product differentiation between the outputs of competing sellers (that is, the extent to which buyers have preferences for specific brands and the difficulty faced by outsiders wanting to enter into a product area) is important but the existence of this leads to, and therefore, is highly correlated with market concentration. [Parker, 1976, p. 8]

Integrating firms and market concentration are becoming an increasingly important topic in agriculture, and the cut flower industry is no exception. Although there exist many towns which are served by single florists or by a single chain of florists, many argue that the biggest departure from the free enterprise system, as it relates to floriculture, is found in the wholesale segment of the industry. Even in some larger metropolitan areas, florists often are placed at the mercy of only a handful of wholesale suppliers. Long standing customers are seldom threatened. However, new, and in some cases untraditional, retailers sometimes have difficulty finding a consistent supply of product. Many wholesalers feel threatened by retaliating retailers who may boycott them for selling to newcomers in the market place. As such, some of these new retailers have found it necessary to vertically

integrate by purchasing their own greenhouses and raising their own product.

In a 1978 paper, Edward Jesse provided a good indicator of the complex problems one deals with when discussing performance. His paper's title, "Measuring Market Performance: Quantifying the Non-Quantifiable," itself offers a good clue of these problems. Jesse [1978] discusses performance objectives, indicators and extremes for the food industry. The eight objectives Jesse suggests are generalized as follows:

- (1) To assure an abundant and reliable supply of goods and services at economical prices, and to stimulate the production and distribution of the goods and services;
- (2) To facilitate and promote the production and distribution of that combination of goods and services which best reflects the preferences of consumers (through adequate market signals) and the real relative costs of production;
- (3) To create incentives for increased productivity in each activity of the total system;
- (4) To provide productive and rewarding employment opportunities in the system (level and type of employment and compensation);
- (5) To equitably and fairly distribute rewards of the system (level and price spreads), and especially to assure government policies and programs (where applicable) are, in the aggregate, fair and equitable;
- (6) To discourage uneconomic uses and spoilation of natural resources and the environment;
- (7) To encourage social desirable population settlement patterns (e.g., for production purposes: to encourage settlement in areas of available labor pools, etc.); and
- (8) To encourage a sense of belonging and effectiveness among participants in the system (morale).



Jesse suggests that these objectives, together with appropriate indicators and extremes (the indicators of each objective and the possible extremes for each indicator vary with the industry being discussed), can "reflect an exhaustive specification of what an ideal economic system should accomplish" [Jesse, 1978, p. 9].

Much of the work on performance of an industry is related to consumer information services and related customer oriented matters. Padberg [1975], for instance, points out that there is a need for concern about the consumer's well-being when discussing performance. He suggests that there are qualitative dimensions of economic performance which must be considered along with the production efficiency profit levels, and selling costs, which make up the quantitative dimensions of performance. The qualitative dimensions offered by Padberg include (a) availability of economy alternatives, (b) product safety, (c) constructive product image and (d) adequacy of consumer information [Padberg, 1975].

Devine and Marion [1978], in a paper entitled "The Influence of Consumer Information on the Structure, Conduct and Performance of Food Retailing," discuss an experiment in which they monitored prices before, during and after a consumer information program. These authors noted that previous work had suggested that imperfect markets may result, in part, from poor consumer information, especially when the various commodities under consideration by buyers are extremely diverse and complicated [Devine and Marion, 1978, p. 3]. Devine and Marion [1978, p. 2] then suggest four hypotheses relating to the food industry (all of which were confirmed by their research), which are offered below in a generalized format:



- H39: Significantly different prices for a standard product (or group of products) would be charged by competing sellers prior to the dissemination of comparative price information.
- H40: The public dissemination of comparative price information would reduce the dispersion of prices across stores and lower the average market price level.
- H41: The level of consumer satisfaction with stores and products would increase significantly in the market as a result of the comparative price information program.
- H42: The perceived and estimated value of comparative price information would exceed the cost of providing such information.

It should be emphasized that Devine and Marion [1978] refer to a standardized product. Similarly, these authors' mention of the previous research (which suggests that extremely diverse and complicated products may result in imperfect markets, if there is poor consumer information about these products) implied a need for better information and/or standardization. Dale C. Dahl [1975], in his paper "Public Policy Changes Needed to Cope with Changing Structure," argues that "consumers should be given the advantage of a technical evaluation of all food products that they buy. If there are different qualities of the product being sold, these qualities should be identified according to some comprehensible standard of reference and this information should be posted clearly in retail stores" [Dahl, 1975, p. 212].

An argument could easily be made for extending this standardization beyond food products and beyond the consumer retail segment of industries. After all, most graded food is indeed standardized by manufacturers, growers, distributors or wholesalers and not by the local supermarkets in which it is purchased. (Unit pricing, where adopted, may be an effort by retail supermarkets to provide some of the informational benefits of standardization to consumers.) Dahl [1975] seems to

encourage extending standardization as he urges grades and standards be adopted even for farm inputs for price reporting purposes and to encourage technical competence. Dahl [1975, p. 212] says that defining input product standards can be left to the input industries who can themselves determine the "representative" products.

While standardization of floral arrangements is not advocated (although wire services do feature "standard" arrangements), standardization of the quality of the flowers used has been advocated by some. Although a grading procedure has been used in the past for some flower species (and is still variably in use for some species), size and freshness grades have not been uniformly adopted in the cut flower industry. Operators even vary in the number of flowers they put into a bunch depending on the species being packaged, the wholesaler or grower packaging and the region of the country (or world) that the flowers are being packaged in or are destined for. Once packaged, freshness of flowers marketed can vary tremendously as well. Use of preservatives is not universal on either wholesale or retail levels. Hence, flowers marketed could have tremendous variability in quality. Information on the flower condition would, therefore, be an asset.

The information process for food products has been extended further to open dating, a method of dating perishable products to give consumers an indication of relative freshness. Open dating refers to the fact that the dates are discernible to consumers (as dates), as opposed to closed dating (in a coded form), where dates are perceived only by those familiar with the particular code. Research has shown that supermarkets have somewhat changed their control and handling procedures when using open dating. Consumers have returned a generally favorable response to

these added efforts. Product spoilage was greatly reduced. However, it should be noted that consumers, while exhibiting pleasure with open dating, generally were not sensitive about using open dating to its fullest advantage. One conclusion was that the results accrued due to distributor's efforts rather than consumer sensitivity about the program [Padberg, 1977, p. 7]. A study by the USDA showed that store losses, in terms of dollar values and packages requiring rehandling, dropped after open dating was instituted. Shopper complaints about purchasing spoiled or stale food also diminished, this by 50 percent. Yet, in this study only 41 percent of the consumers polled even noticed the dates on the product packages [USDA, ERS, 1973, p. iv].

One of the information processes sometimes available involves the price publications of the Market News Service of the USDA. The Market News Service reports prices resulting from market transactions at the wholesale or farm level. Henderson refers to the Market News Service as reporting prices which are "pseudo-opportunity prices for actual and potential buyers and sellers" [1979, pp. 117-118]. Henderson refers to these USDA price reports as being indicators which are used as measures of aggregate market performance in that they are rough corollaries of market-determined prices. The Market News Service currently reports prices for floricultural crops for several cities across the nation.

A related problem is that of thin markets, i.e., markets which have small volume or small numbers of transactions involved in price determination [Hayenga, 1979, p. 1]. Poor information and/or poor communication facilities is on the list of causes that Powers [1979, p. 35] offers for thin markets. Structural elements that limit entry into the market, the natural size of a market (if, for example the total

potential size of a market is still too small to make for a liquid market), poor product quality and technical inefficiencies that make it costly to operate market facilities (hence, resulting in insufficient market liquidity) are also offered by Powers as causes of thin markets. Although thin markets do not necessarily result in unsatisfactory market performance, the chief concern is with markets where vertically integrated firms, long-term contracts, etc., dominate. Price and/or product manipulations may occur which result in abusive treatment of customers, largely due to scarcity of market determined reference prices [Hayenga, 1979, p. 1]. Thin markets may fail to provide "a reasonably stable, efficient, equitable, minimal risk means of transferring ownership of a product from buyer to seller, and provide prices which are accurate signals of supply-demand conditions, particularly due to insufficient market liquidity or possible market manipulation" [Hayenga et al., 1979, p. 10].

It is because of this thin market possibility that market information assumes greater importance and that Market News price reports, where available, take on even greater consequence. However, it should be noted that even with the Market News Service, market thinness is not necessarily alleviated. As a matter of fact, thinness of markets which have access to Market News reports raises the concern of information accuracy. Reported prices in thin markets may not necessarily reflect actual market opportunities for many buyers and sellers or for the full diversity of product types (grades, weights, other physical characteristics, etc.) [Henderson, 1979, p. 118].

Henderson [1979] raises five issues regarding the efficacy of market reports, given the existence of a thin market. These issues

yield five possibilities which include the following actions: (1) the volume upon which the reported market prices are based could be reported, (2) non-price market information could be expanded, (3) one could ignore thin markets, (4) one could tie standard terms of contract or trade to the market reporting system (standards) and (5) one could simulate or formulate prices based upon prices of related products traded in less thin or more price-representative markets [Henderson, 1979, pp. 118-120]. Powers [1979, p. 32] seems to echo Henderson's sentiments as he states that the two most pressing problems of thin markets are (1) measuring market liquidity and (2) generating useful market information.

Now, with this basis of previous commodity subsector research having been established, the cut flower industry will be explored. Reference to this research, especially the listed hypotheses, will be frequent, with attempts made to show the links between this research and the cut flower industry.

### CHAPTER III

#### CUT FLOWERS: GENERAL COMMODITY CHARACTERISTICS

"Flowers add to our joys and comfort us in our sorrows, and I am sure that in war we will need them more than ever." So wrote Eleanor Roosevelt, wife of the President of the United States, during World War II. At a time when some products were being rationed and when many others were removed from the marketplace altogether (because the government had deemed them luxuries rather than necessities), it is worth noting that flower production was not curtailed and that the flower business remained relatively undaunted [Williams, 1960, p. 280].

Flowers, as a product group, have been variously described as being luxuries and necessities, niceties and essential nourishment for the soul. Whichever they are, there are many characteristics of flowers themselves which affect the industry that raises, markets and works with flowers. The general commodity characteristics of cut flowers will be described in this chapter.

#### Product Description

Over 350,000 species of plants have been reported and, with the exception of the known ferns and some algae, fungi and mosses, all flower as an essential part of the sexual reproductive process [McConnell and Sheehan, 1981]. Although commercial propagation often uses asexual methodologies, nature frequently depends on flowers for regeneration. If the flowers are to be cut from a mother plant for

a cut flower industry, however, these regenerative capabilities are all but lost. Yet, it is this flower removal upon which the cut flower industry is dependent. These cut flowers, along with plants with their flowers still attached (i.e., potted blooming plants), potted foliage plants and cut greenery, subsequently form the nucleus of the floral trade.

Although almost all species have flowers, not all species present likely candidates for inclusion in the cut flower industry. As a matter of fact, fewer than 10 percent of the world's species have been screened for any purpose, and only about 1 percent have been thoroughly screened for any possible use by man [Vicker, 1981]. Most species do not exhibit the attractive or unusual flowers that many floral patrons appreciate. Other flowers do not lend themselves to being cut because of size, an extraordinarily high degree of perishability, an unpleasant odor, messy exudations or the like. Still, there are other plants which have not been researched to the degree necessary to predict or control flowering, such that commercial production is feasible.

It is this last feature, that of being able to predict or control flowering, which is of utmost importance to the cut flower industry today. While not all species are flowered under artificial conditions, the cut flower industry today relies on commercial flower forcing for a large portion of the flowers of some of the major species on the market. It is the synthesis of appropriate light, water, nutrients, temperature, etc., that allows growers to mass produce chrysanthemums year-round (instead of just in the fall), to force poinsettias and Easter lilies when potential purchasers have grown accustomed to buying them and to

time other species for peak production for the holidays and other occasions when demand is greatest.

Hence, one could say that the ideal flower to be used for cutting is one that has a pleasant odor, has relatively good keeping qualities, is easy to produce such that dependable quantities can be had at reasonable costs and at predicted times and is a flower with general consumer appeal. The flower species that have met these or similar criteria over the years have been limited; yet, the count has probably always been higher than the number of species commonly in use around the country. Although there are reports of the use of many additional species [Joseph, 1981], standard and miniature/spray carnations, pompon and standard chrysanthemums, gladioli and hybrid tea and sweetheart/miniature roses constitute the vast bulk of flowers that florists regularly use nationwide. Upon entering many shops during slack periods, a buyer may not be able to find even these species, much less varieties such as snapdragons, asters, daisies or bulb crops. Furthermore, many of today's younger florists have never worked with, or perhaps even seen, such species as bachelor buttons, cornflowers, delphiniums, Sweet William, ginger, heather, freesias, anemonies or cut violets.

Hence, one must ask why have certain species maintained or increased their popularity, while others have been virtually neglected? The answer may relate to factors such as perishability of the flowers or appealing fragrance. The answer may lie with florists' tastes and desires. However, the answer may go much deeper.



### A Product with Meaning

A flower's popularity may relate to consumer habits and consumer familiarities with various species. It may relate to consumer purchasing patterns. A flower's popularity may, on the other hand, be ingrained in demographic or socio-economic characteristics.

For example, the members of the post-World War II baby boom are maturing and now comprise the majority of the primary consuming population. Influences affecting this particular group will then be multiplied several times their "normal" impact due to the tremendous size of this generation. Furthermore, their progeny, coming in waves known as "echo booms" [Fialka, 1982], will likewise be influenced as individuals form households and have families. Coincident with the gradual maturation of this population has been some shifting in flower use patterns, e.g., non-use of funeral flowers. Any personal values affecting these use patterns will probably be handed down *en masse* to the following generation(s).

Use of some flower species may be tied to other factors such as holidays or specific occasions. Valentine's Day is becoming more important to the florists' trade. Therefore, the rose, which has a romantic connotation for many, has seen increased use in mid-February. On the other hand, use of gladioli has declined along with the custom of sending funeral flowers and other memorials. Memorial Day, too, has lost a tremendous amount of favor as a florist's holiday (Table 3-1), except for some isolated areas near the Rocky Mountains.

While books have been written on the meaning ascribed to various flower species and flower colors (e.g., Cole [1970]), no one in the

Table 3-1. Percentage of FTD Holiday Orders Attributed to Various Holidays, U.S. & Canada, for Selected Years

Holiday	Percent of Orders
1969-70	
Mother's Day	35.6
Christmas	32.9
Easter	17.3
Valentine's Day	8.0
Thanksgiving (U.S.)	3.7
Memorial Day	1.1
All others	1.4
1974-75	
Mother's Day	36.1
Christmas	33.7
Easter	15.5
Valentine's Day	9.6
Thanksgiving (U.S.)	2.7
Father's Day	0.5
All others	1.9
1979-80	
Christmas	34.5
Mother's Day	33.9
Easter	13.1
Valentine's Day	12.4
Thanksgiving (U.S.)	3.4
Mother-in-law's Day	1.3
All others	1.4

SOURCE: Fossum [1981].

industry has ascertained whether roses connote romance if red or purity if white, due to mythology, due to consumer demand or due to the tastes and preferences of florists. In either case, there has long been the suggestion that flowers have meaning; The Society of American Florists' motto of "Say it with flowers" suggests this, perhaps to the point of implying that what you are saying is only as important as what you say it with! Of course, this would only apply to those flowers purchased for others and would not include the fast growing segment of the industry pertaining to flowers for a consumer's own use. Yet, one would have to concede that flowers, especially as a gift-giving alternative, often are "a product with meaning."

#### Various Cut Flower Species and Other Inputs

There are many species "providing" flowers for sale as cut flowers. Many of the species have characteristics about them which make their marketing unique. Roses, for instance, often have thorns, which make their merchandising nothing less than a touchy subject. Carnations, although readily storable, are considered by many to be the most perishable of flowers due to their high susceptibility to ethylene gas.

Cut flowers are not often sold alone at traditional retail (and now some mass markets) outlets. Greenery and other inputs go into making a floral arrangement or boxed bouquet. These will be briefly discussed as well.

It is because of such distinctions that brief product descriptions of major species and groups of cut flowers and other inputs will be outlined below, as examples to illustrate product diversity. Much of the following, as cited, was gleaned from the classic floricultural

text, Commercial Flower Forcing, by Laurie et al. [1969]. Other information comes from the author's own horticultural training and experiences.

Carnations (*Dianthus caryophyllus*-Caryophyllaceae). The carnation, in terms of numbers sold, is the most popular cut flower species in the U.S. In 1980, carnations outsold roses in the U.S. over two-to-one; they are imported in greater numbers than any other flower species. The natural variation of flower color is widely supplemented by tinting. The vascular system of this species allows it to readily absorb tints, and some firms have even established reputations as carnation-tinting specialists. The flower's color versatility is complemented by the carnation's adaptability in use, as standard and miniature/spray varieties are both used in colorful carnation and mixed flower arrangements. Both standard and miniature/spray varieties are used extensively in boutonniere, corsage and wedding work. Occasionally florists will "feather" standard blossoms to reduce size and give a more dainty appearance. Standard carnation varieties are also widely used in casket sprays and other funeral arrangements, as the long graceful stems seem to add solace to the funeral piece. The small size of miniature/spray carnations makes their use for hospital arrangements ideal, as hospital display space is often limited. Some growers also sell bags of standard carnation flower heads which are used for flower leis.

Although carnations could be cropped indefinitely [Laurie et al., 1969], U.S. growers typically maintain plant beds for only two years. There are instances where cut flowers are harvested for at least three or four years from a single planting, but limits to maintaining flower

quality and disease problems often preclude this. On the other hand, economic considerations have sometimes even dictated the practice of double-cropping carnations with other greenhouse crops during the same year. (Carnations have been planted for production of only the initial flowering and then removed, yielding the greenhouse space to higher-valued bedding plants or a holiday potted plant crop, for instance.)

Carnation production requires extensive labor, but even the labor requirements can vary drastically. Producing standard varieties requires much labor for disbudding lateral flower buds, while the production of miniature/spray varieties usually demands labor for the removal of apical shoots to encourage branching and simultaneous blossoming. In areas where temperatures fluctuate widely, or where growing conditions vary tremendously due to fertility, moisture and/or temperature combinations, splitting of the calyx occurs [Laurie et al., 1969]. When such "splits" regularly develop, additional labor is required to band flower calyces, prior to their opening, to prevent or reduce damage. Rubber bands, plastic collars or a type of transparent floral adhesive tape are most commonly used. Although banded flowers are not typically down-graded (unless splitting does occur), some tradespeople may discriminate against them. Colorado carnations, because of their general freedom from splits and lack of any associated preventive banding, are often requested by name; hence, in many markets they retrieve a premium price. Conversely, when carnations develop bad splits, they are down-graded to their own grade (i.e., "splits") and retrieve the lowest prices.

Labor is also needed for "stringing" carnation supports, as the plants develop long stems. Placement of the supports, originally made

of string weaved throughout the bed but now often wire and string or bamboo combinations, can require varying amounts of labor, depending on the growing patterns of the crop.

There are three main producers of carnation cuttings in the U.S. (Yoder Brothers, Inc., Pan American Plant Corporation and Colorado Carnations, Inc.). However, many carnation producers maintain some cutting propagation facilities of their own. If among the group of self-propagators, larger growers often must either maintain separate labor crews or reduce production or production standards to complete all of the cut flower production and propagation tasks. Separate growing facilities are often maintained for stock plants, propagating areas and crop production areas.

Carnation crops can be timed for holidays or other occasions. About 90 days is required from a May pinch and about 150 days from an October 1 pinch, in the Midwest, until blooming. However, in areas with cooler and less bright summer conditions, the length of the first flowering following the May pinch may be longer; in areas with higher winter light intensities, the flowers following the October 1 pinch will develop faster. Sometimes growers make supplemental plantings for cropping specific cultivars for certain holidays [Laurie et al., 1969].

Carnation supplies can be amplified because of this flower's adaptability to dry storage. Flowers, so stored, are usually harvested in a tight bud stage and maintained out of water at 0-2° C. Other storage methods, although not widely adopted, include hypobaric storage.

Supplies can also be amassed due to this flower's response to silver nitrate, silver thiosulfate and related solutions. Reports of treated flowers lasting for up to 33 days have been advertised by one

grower-shipper, as something that one could regularly expect from this special handling. More about such techniques will appear in later chapters.

One problem that is most often associated with carnations is damage from contact with ethylene gas. (Orchids also frequently exhibit ethylene gas damage.) After exposure to this gas which is emitted by maturing fruits and vegetables, florists' greens, aging flowers and decaying plant material, etc., carnations develop a condition known as "sleepiness." Sleepiness is the condition in which petals of the carnation turn upward [Laurie et al., 1969]. Sleepiness virtually eliminates the affected carnation's marketability. It has been perhaps most evident in supermarkets where floral sales' areas are often adjacent to produce departments and where overnight flower storage frequently occurs in a produce department cooler.

Marketing of carnations varies with the source and is described in detail elsewhere in this dissertation. It will be noted here, however, that Colorado and California growers typically sell their flowers in a fully-opened stage. South American imports typically arrive to market in a tighter bud stage. Miniature/spray carnations are usually marketed with 25 to 35 buds per bunch with some flowers open and others just showing color. Standard varieties are usually sold at wholesale with 25 blooms to the bunch.

Chrysanthemums (*Chrysanthemum morifolium*-Compositae). The chrysanthemum flower, or "mum" for short, is actually an inflorescence of many florets [Laurie et al., 1969]. Blooming is a photoperiodic response. With proper control of light (darkness of a certain time

period, actually triggers the response), the plant may be forced into bloom at any time of the year. Unlike carnations and roses, chrysanthemums are planted for only one cutting and then removed from the planted bench. Chrysanthemums are also widely used as a potted flowering plant, and "pot mums" probably represent the number one potted blooming plant on the market.

The flowers are classified by kind and arrangement of the florets (single, anemone, decorative, pompon, fuji, spider, incurved or reflexed types), as well as the kind of growth pattern used (resulting from various cultural techniques; flowers are grown in standard, spray or disbud forms). Some of the chrysanthemum's florets, known as ray florets, only possess female flower parts. Others, known as disk florets, are composed of both male and female flower parts and are formed of extremely short petals [Laurie et al., 1969].

One prominent type of chrysanthemum used as a cut flower is the "single" or "daisy" type. This flower has one or more center rows of ray flowers with disk florets at the center held in a daisy-like arrangement. Closest in form is the "anemone" type chrysanthemum. Here, the center florets are more developed, revealing a tubular shape, forming a center cushion [Laurie et al., 1969]. Anemone type chrysanthemums resemble some forms of shasta daisies, another member of the Chrysanthemum genus. (Figures 3-1 and 3-2 show eight types of chrysanthemums.)

The ray florets of the "decorative" type chrysanthemum are longer on the outer rows of petals than for the inner rows of petals. This yields a flower with a flatter appearance [Laurie et al., 1969].



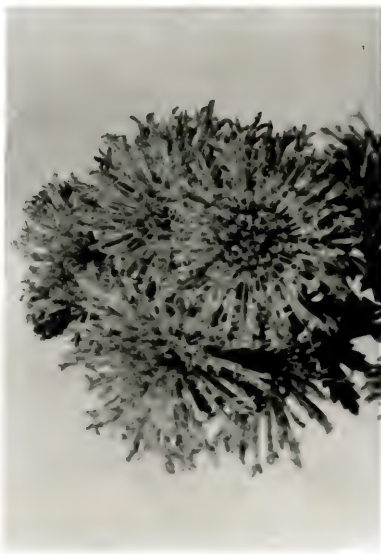
Figure 3-1. Four types of chrysanthemums: Clockwise (from upper left) are the single (daisy), fuji, incurved and decorative types.

[Photographs courtesy of Yoder Brothers, Inc.]



Figure 3-2. Four types of chrysanthemums: Clockwise (from upper left) are the anemone, pompon, spider and "feathered decorative" types.

[Photographs courtesy of Yoder Brothers, Inc.]



"Pompons," as a flower type, have ray florets over the entire flower head. Small button type chrysanthemums technically exemplify the pompon flower type.

The term "pompon," however, dominates the trade to suggest the spray form of chrysanthemum culture. Spray chrysanthemums represent the form resulting from growing methods in which the apical buds are removed to yield a multi-flowering stem. Single, anemone and decorative, as well as pompon type chrysanthemums are widely grown as spray chrysanthemums [Laurie et al., 1969]. To a more limited extent, fuji and spider type chrysanthemums (described below) are also raised as spray forms. Wholesale market reports describe spray chrysanthemum forms as pompon chrysanthemums of the daisy (single) type, of the cushion (pompon and decorative) type or of the novelty (button, fuji and spider) type. Pompons regularly appear on the market in shades of lavender, yellow and white. In the autumn months, bronze and dark red are also often added to the available color spectrum.

The "spider" type chrysanthemum has tubular ray florets, sometimes with hooked ends, in which the outer florets are often much longer than center florets. "Fuji" type chrysanthemums are similar in appearance to the spider type but never have hooked ends; center florets are of about equal length to outer florets [Laurie et al., 1969]. Spider and fuji type chrysanthemums are regularly available in yellow and white. Other colors are available on a more limited basis.

"Reflexed" type chrysanthemums have ray florets with long petals. The outer florets curve downward, resulting in a less formal flower than other types [Laurie et al., 1969].

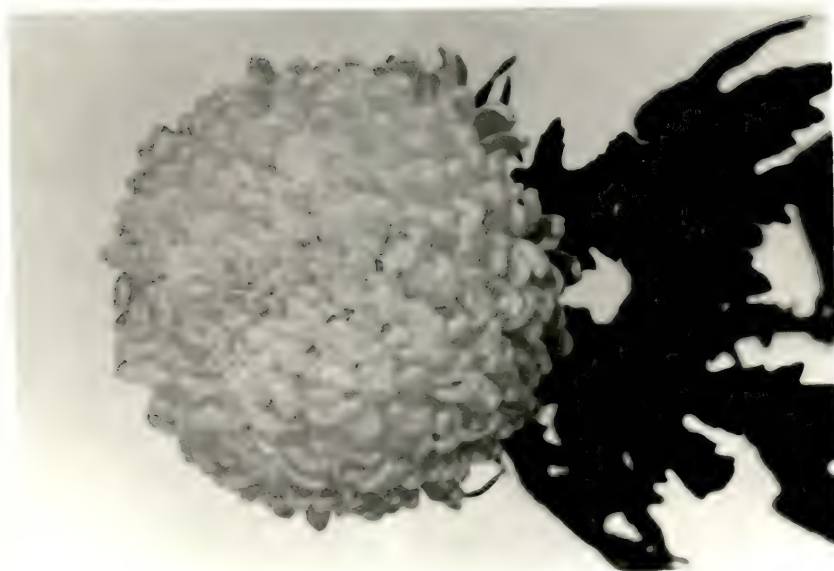
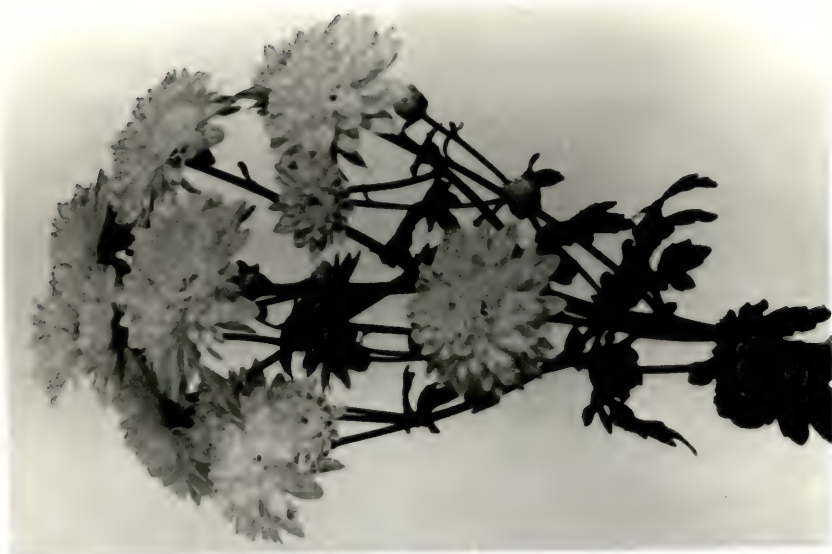
Finally, the "incurved" type chrysanthemums are larger flowered types with long petals of ray florets curving upward and inward. The result is a large globular flower (Figure 3-3). This type is, by and far, the dominant type raised in the standard chrysanthemum form. (This cultural form is usually raised on an unpinched plant with a single flower per stem. Fuji and spider type chrysanthemums are also raised in the standard cultural form [Laurie et al., 1969].) The incurved flower type has traditionally been popular used singly as a corsage in the fall, and hence, it has received the common nickname of the "football mum." Florists often use them, with chenille stems (pipe cleaners), to add (with glue) facial features (e.g., eyes, mouth, etc.) to use in novelty arrangements. Standard incurved varieties are typically available in yellow and white, although one occasionally finds bronze, red or lavender.

One other cultural form is the "disbud" form. "Disbuds," as they are called, are raised similarly to standard forms but have a smaller flower and shorter stem. They are often raised more crowdedly on the greenhouse bench or bed. They typically are raised for local sales only [Laurie et al., 1969].

Standard form chrysanthemums, because of their size, are often used in large floral arrangements, such as those needed for funerals or church pieces. Size has also led to some limitations on use, especially as florists trend towards smaller, "more personal" arrangements. Pompon chrysanthemums, on the other hand, can be employed in smaller arrangements, as individual flowers or by the stem in larger pieces. Pompon chrysanthemums are frequently utilized by themselves in arrangements but are also adaptable as "filler flowers" to complement other flowers used

Figure 3-3. The incurved chrysanthemum (left) is shown here as typically raised in the standard form; a decorative chrysanthemum (right) shown raised in the pompon form.

[Photographs courtesy of Yoder Brothers, Inc.]





as focal points. Disbuds, depending on size and type, vary in their use, as well.

While many different problems can plague chrysanthemum production and marketing, chrysanthemums regularly suffer from only two problems in the marketplace--botrytis and leaf miner scars. Botrytis blight, or gray mold, is a fungus resulting from contact between flower petals and water. The resulting browning of the petals makes flowers virtually unsaleable, except at greatly reduced prices. Botrytis often appears in areas such as flower shop coolers, where high moisture occurs.

Leaf miner larvae tunnel through the leaves of chrysanthemums, resulting in brown colored irregular patterns on the leaves. At one time, leaf miner scars were seldom found on the chrysanthemum foliage seen in the marketplace, except on discounted merchandise. Today, however, the leaf miner has become so widespread and control so irregular that flowers with marred leaves have been "reluctantly accepted" in many markets. To some extent, leaf miner scarred foliage has even become expected.

The marketing of chrysanthemums varies somewhat from grower to grower and region to region. Pompon chrysanthemums are typically bunched with the size of the bunch varying widely. At one time, Laurie et al. [1969] report, 9- and 16-ounce bunches were common; yet, these even varied with market supply. Today, bunch size, stem length and stem count can vary with season, market supply, grower and even market or customer to which the grower is shipping. Pompon chrysanthemums are often bunched using twist-ties or rubberbands and then "sleeved" using plastic or cellophane wrappers. Grading, except for bunch size, is virtually non-existent.

Standard chrysanthemums are often marketed by the box with boxes containing layers of flowers carefully arranged. Due to the high incidence of the shattering of flower petals in incurved standard chrysanthemums, these are often marketed with a mesh bag being placed over each flower head (Figure 3-4) and/or heavy use of tissue paper around the layers of flowers. Standard football mums are often graded by flower size.

Chrysanthemums also display a relatively long post-harvest life. This life can be further extended by maintaining storage of the flowers dry (out of water) at 0-2° C. Laurie et al. [1969] reported that, properly stored, chrysanthemums can be maintained for as long as three weeks.

Gladioli (*Gladiolus grandiflorus*-Iridaceae). The gladiolus flower, as sold, is a spike of several florets, which open in succession from a point located about midway from the bottom of the spike to the tip of the spike. The flower spikes, because of their size, tend to restrict gladiolus flower use to large centerpieces, wedding or funeral work or church or other large commercial applications. However, some florists have used individual florets in corsage work or have shortened spikes or used miniature gladiolus varieties as focal flowers in smaller arrangements.

The flower spikes are typically shipped dry, today in bunches of 10 spikes, with only a few florets showing color. Retail florists typically force the florets into bloom by placing spikes into water upon arrival. Snapping the tips off the spikes also encourages a more uniform flower opening. Still the problem exists that florets near the

Figure 3-4. Standard chrysanthemums are often marketed with a mesh bag placed over each blossom.



bottom of the spike will have faded by the time florets near the tip have fully opened. (Snapdragons, too, exhibit this problem but not to the same degree as gladioli.)

Gladioli, or "glads" for short, are largely produced in Florida and California in winter; florists are supplied by a succession of northern states as summer progresses. The fact that production today is confined to the outdoors requires warm weather and plenty of land. More land is devoted to gladiolus production than to any other cut flower crop. Unlike almost any other cut flower crop, gladiolus production employs many traditional field practices of cultivation. Rows of corms are planted in tractor-tilled fields, and plants are cultivated, irrigated and fertilized in a manner similar to row crop farming. The extensive capital requirements for land, machinery and labor (for planting, harvesting of spikes and, later, corms, and the cleaning of corms), have kept supply from expanding greatly.

After cutting, during shipment and while on display at wholesale and at retail, care is taken to maintain the spikes in a vertical position. Geotropism, a response to the earth's gravity, is exhibited in gladioli (and some other species, such as snapdragons) by a bending upward of flower tips (from the horizontal). Hence, the upright position is maintained rather than that of the horizontal (Figure 3-5).

Gladioli are susceptible to botrytis blight, a fungus. Therefore, caution is taken during marketing to prevent floret contact with water. Florets may become lucid from botrytis, if subjected to overly moist conditions. Consequently, retail florists often display gladioli on the showroom floor to keep them dry, as well as to encourage florets to open.

Figure 3-5. Gladioli as seen in a New York City wholesale house.

(Care is taken to maintain gladioli in a vertical position because of their response to geotropism, which would cause the spikes to bend upward if placed in a horizontal position.)





Roses (*Rosa hybrida*-Rosaceae). Roses, perhaps, fill the classic perception of a cut flower in the minds of most people. This status may have evolved from the prominent use of the species for gifts of affection, by its dominance in garden club contests and/or by the almost royal nature afforded the rose when used in beauty contest awards. Certainly the rose has achieved a royal status in the pricing structure of the cut flower industry, as the rose continuously commands top prices among the major cut flower species. The Floral Report [The Floral Index, Inc., 1979] notes that roses contribute to one of every four florists' cut flower sales and provide florists with 21 percent of cut flower sales and 15 percent of total sales in a typical year.

Roses come in many colors and, in some cases, multiple colors per flower. Red roses are often used for romantic sentiments, while white roses are frequently seen at weddings because of the connotation of purity. Other colors available include several shades of yellow, pink and coral or orange. Several multiple color combinations also occur. (Flowers Speak [Cole, 1970] outlines the supposed meanings of many flowers and flower colors.) Red roses account for about 77 percent of the roses sold in the U.S. Peach or coral-colored roses account for about 10 percent of roses sold, while the yellow, pink and white colored flowers account for the remainder [Anonymous, 1982b].

Roses are typically planted in greenhouses during the first half of the year, this coinciding with the period following Christmas, Valentine's Day or, most typically, Mother's Day [Laurie et al., 1969]. As these three holidays constitute the periods of peak rose demand, growers will usually not discard old plants until after flowers have been harvested for one of these holidays. Once old plants are



discarded, beds are cleared out and prepared for new plantings; this normally includes steam or chemical sterilization.

New plants, usually purchased from commercial suppliers, typically yield their initial flower cuts two to four months later, depending on cultivar and cultural practice. The plants then are usually maintained for three to five years of production. Presence of disease or changing marketability of a particular cultivar often curtails this period, while a disease free planting with continued strong flower production and high cultivar demand may keep a particular planting from being discarded for several additional years. Some growers have reported keeping beds in production for as long as nine years or as short as one year, depending on the above factors. However, as a planting is usually relied on for production for many years, rose cultivar selection must be considered long-term production decision.

Replanting of beds is normally done on a rotating basis throughout an operation to avoid drastic production variations and to spread the added work load over several different years. As cropping continues on a particular bed, greenhouse height limitations usually require periodic sharp pruning of rose plants. This pruning is often performed during the month(s) following Mother's Day. Summer's generally reduced flower demand (and already lowered prices) and increased summer light (which keeps the natural production levels higher than during the winter months) allow such prunings to be performed without drastically affecting a producer's cash flow.

Light intensity is considered the most important limiting factor in rose production. Although no photoperiodic effects have been ascertained, natural production peaks occur in the summer, when light

intensity is the strongest (that is, unless plants are severely pruned). Conversely, lowest production levels naturally occur during the winter months. As rose demand patterns are somewhat reversed (as confirmed by price variations, to be discussed later), growers often supplement winter light levels with High Intensity Discharge (HID) or sodium vapor lamps. The need for the highest possible light intensities also provides reason for roses to be most often raised under glass greenhouse glazing, especially in the more northern latitudes, as glass transmits light better than other covering alternatives.

Other greenhouse practices followed by rose producers include the application of shading compounds in the summer to reduce the heat that comes from increased light intensity and the use of heat blankets to contain heat in winter (Figure 3-6). While heat blankets could be used for many crops, the higher priced rose crops, and this crop's need to remain warmer than some other greenhouse crops, provide greater incentives for rose growers to make use of such innovations.

Pinching of rose plants is often performed to time the blooming of rose plants for specific holidays or time periods. Local weather conditions affect crop timing. Hence, crop timing is often not precise. Poor timing can result in a grower "missing" the price peaks of a holiday period. For this reason, some growers refuse to take part in this kind of gambling. For most, though, an averaging of critical pinch dates, based on past performances, is followed with some success. In late spring or summer, about 5 1/2 to 6 weeks are required for flower production following a pinch; during the darker winter months, an additional 2 to 2 1/2 weeks or so are usually needed, depending on

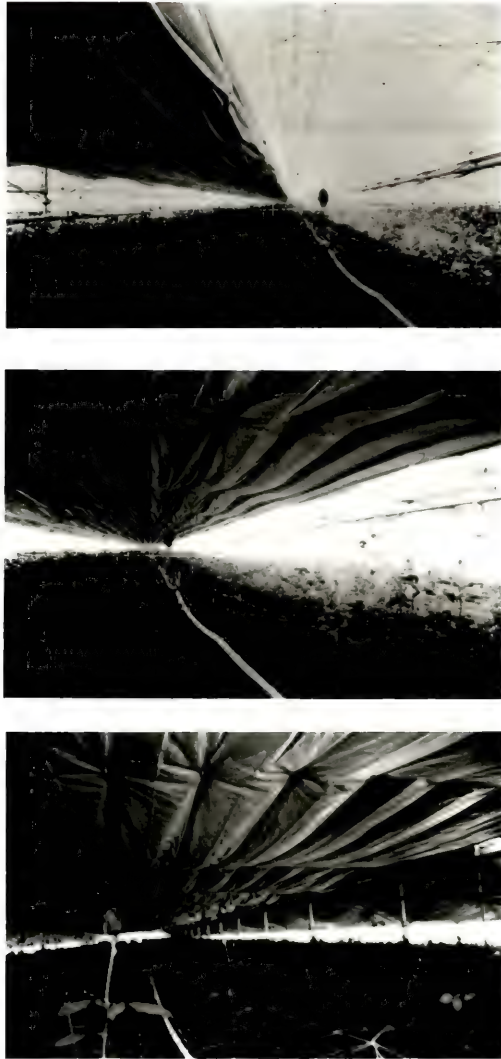


Figure 3-6. Demonstration of the closing of a heat blanket over a rose bed. (The higher returns to rose growers allow them to afford such energy efficient technologies.)

greenhouse conditions, cultural practices and cultivar [Laurie et al., 1969].

Hybrid tea roses do not produce the numbers of flowers per square foot that floribunda roses (sweetheart varieties) provide. While typically only about 10 percent of a rose range may be used for sweetheart rose production, the numbers of flowers usually produced do not follow the same proportions. Up to twice the number of sweetheart roses may be produced per floribunda rose plant as for hybrid tea rose varieties [Laurie et al., 1969]. Whether due to marketing practices or consumer demand, sales of the hybrid tea roses also far exceed those of sweetheart roses. Hence, prices demanded for hybrid tea roses are naturally higher.

Roses are often sold at retail in boxed arrangements (frequently by the dozen), in vased arrangements of roses, or in mixed flower arrangement combinations. In addition, both the hybrid tea and sweetheart varieties are used as boutonnieres, in corsages and in other types of wedding work. Funeral arrangements, especially casket sprays, often feature hybrid tea roses, while sweetheart roses, because of their small size, are ideal when used for hospital arrangements. Hybrid tea roses are also frequently floated in bowls of water or brandy snifters; these are commonly known in the trade as rose bowls.

Recently, one grower has experimented with the selling of trays of (just) rose buds. The buds were the result of permitting newly planted rose bushes to develop their initial flowers rather than the more typical pinching of the first flower buds. The buds were being marketed for corsage and wedding work (Figure 3-7).



Figure 3-7. One grower foregoes the initial rose pinch and allows buds to develop.

(He markets the resulting short stemmed flower blossoms to florists for corsage and wedding work in an aluminum tray with floral foam and water in the bottom.)

Another recent introduction is that of the intermediate rose varieties. Usually retailed as hybrid tea roses, these cultivars produce slightly smaller flowers (although still larger than that of sweetheart roses) but have the normal stem and foliage appearance of the regular hybrid tea varieties. Some demand has been created because of the more dainty blossom appearance and the slightly different colors available with these intermediate rose varieties.

Marketing of roses is nothing short of a touchy subject. The thorns that are characteristic of almost every variety pose a special handling problem. Rose defoliating machines, which have been available for some time, provide some relief for flower handlers. Yet, the average dealer must still pay a greater heed to detail when working with roses than when manipulating other species.

The high perishability of this species (relative to others) also provides an added challenge to rose marketers. As a result, research on floral preservatives has often centered on roses. Special handling recommendations have been espoused for roses immediately after cutting, an hour after cutting and for subsequent marketing stages. Roses are often packed in ice for shipping, something which occurs very infrequently for other species.

Roses are almost always wired when sold through traditional retail florist outlets. Bent neck frequently occurs, as roses often display difficulty in taking up water as needed. The wires help to mask this phenomenon.

Roses, unlike some other species which essentially just "brown" with age, continue a quite evident bloom development and maturation during their marketing. A larger more open flower seems to be preferred

by many florists when greater color is desired (e.g., wedding arrangements, funeral casket sprays). The same is true for all occasions due to customer preferences (or customer training) in many parts of the South. In the Midwest and Northeast, however, blooms are often marketed in a tighter bud stage, except perhaps, for wedding or funeral work.

Other cut flower crops. Many other species of cut flowers are marketed on a regular or seasonal basis. Bulb crops such as tulips and narcissus regularly are marketed in winter and spring months. The spring, summer and fall flower gardens often provide cut flowers such as peonies, iris, lilies, daisies, celosia, dahlias, zinnias and chrysanthemums. Many florists make use of branches of flowering shrubs and trees, some of which are forced in winter; pussy willows, forsythia and many species of *Prunus* (e.g., cherry and peach) are used in this regard.

Other flowers have what must be considered somewhat specialized uses, and hence, production is often limited to a few growers or to small plantings (as in a grower's auxiliary greenhouse). *Stephanotis* (*Stephanotis floribunda*) and Gardenias (*Gardenia grandiflora*) are among these, as their use is usually restricted to wedding and corsage work.

Orchids also have typically been restricted in use to wedding and corsage work, although one occasionally finds orchid blossoms incorporated into other arrangements. Production of these flowers is usually done by specialists who often restrict their efforts to just one or two of the major orchid species. *Cattleya*, *Phalaenopsis* and *Cymbidium* orchids are the commercially produced greenhouse orchids; *Cymbidium*



and *Vanda* orchids are occasionally produced in outdoor semitropical areas [Laurie et al., 1969].

Other species also have exacting requirements. Snapdragon production, for instance, usually involves the use of different varieties and cultural conditions during the course of the year, rather than the alteration of the greenhouse environment in which they are grown. Asters provide another example as they are often staked when grown. Birds of Paradise, when about ready to bloom, frequently have paper bags placed over their buds to keep opening blossoms intact (Figure 3-8).

Some flowers, which are regularly available, must be considered minor types. Higher prices or their more exotic nature keep their use limited by many florists. *Alstromeria*, *Anthurium*, *Gerbera*, Lilies, *Protea* and *Strelitzia* (Birds of Paradise) are among these. In many cases, supplies of these and other genera are imported from other countries or specialized production areas in the U.S., e.g., Hawaii or Southern California.

Sometimes florists find themselves using what are normally considered potted blooming plants in cut flower arrangements. Poinsettias and Easter lilies, if leftover after holiday plant sales, will often be cut for such uses. Remaining flowers are often cut from potted bulb crops, if some of the flowers in the container have already withered. Occasionally, florists will even cut ivies or other vines from foliage baskets to complement their pieces, or take blossoms from blooming foliage plants such as *Spathiphyllum* or Bromeliads.

The cut flower markets regularly carry many species of what are known as filler flowers as well; these are used to complement other flowers in arrangements. Varieties such as *Gypsophila* and statice are



Figure 3-8. Some species have unusual growing requirements.

Birds of Paradise (*Strielitzia reginae*), showing the paper bags used for protection that are placed over buds before the flower opens (top).

Asters require extensive staking (bottom).



regularly available in most markets. On a more seasonal basis, *Acacia*, *Achillea* and *Astilbe* are also used as filler flowers. These flowers are typically grown by specialized growers who raise large fields of these crops in appropriate climates.

Other inputs. Besides cut flowers used either at focal points or as filler flowers, greenery and some floral accessories often accompany the flower arrangement or bouquet. For instance, few flower arrangements are sold without some cut foliage in them. Leatherleaf fern (*Chamaedaphne calyculata*), plumosus fern (*Asparagus plumosus*), *Pittosporum*, salal (*Gaultheria shallon*), *Podocarpus*, *Eucalyptus*, huckleberry (*Gaylussacia baccata*) and evergreens (*Pinus*, *Arborvitae*, *Buxus*, etc.) are regularly available. Various hollies, firs, spruces and others are seasonally available near the Christmas holiday.

Cut foliage production, too, is usually done by specialized growers. Southern Florida is the locale where many ferns, especially leatherleaf and asparagus ferns, are raised. The states of Oregon and Washington provide much of the broadleaf hardwood material as well as evergreens. Southern California is the home of many *Eucalyptus* producers, while other California operators account for some of the other cut foliage production. Much of the domestic supply of cut foliage is imported from Latin America; Mexico and Guatemala are major exporters, and *Chamaedorea* is the major product provided.

Dried (cut) flower species are also used by many florists in otherwise fresh arrangements. Several firms, the largest of which are in California, specialize in the processing of various species into dried or glycerine-treated bunches. Often, natural stems are removed

and wire stems added. Strawflowers (*Helichrysum*, spp.), *Eucalyptus*, baby's breath (*Gypsophila*) and many woods-, bog- and swamp-grown species are among those used as dried flowers. Sometimes crops such as wheat, sorghum and other grains are also used in this regard.

Even with the plethora of plant material utilized, the average cut flower presentation is still not all natural. Many florists insert wires in some species for added support or for durability of the fresh effect. Several companies specialize in making floral wires of differing gauges for various uses. Many species, when used in corsages, boutonnieres, nosegays, etc., have their stems "taped," and a slightly binding but non-adhesive floral stem wrap is widely marketed for this purpose. Vases, baskets and other containers, as well as boxes, are used to aid in the presentation of floral arrangements and gifts. Added support is offered by the use of various floral foams, styrofoam (shredded or in blocks) or chicken wire, and these are often taped (adhesive) into the containers. Many florists also add preservatives to the water in flower vases. Pretreated blocks of floral foam are marketed with water-proofed wrappings for use with boxed flowers; these provide both water and preservatives to flower stems when they are inserted through the covering. Cards, in envelopes, attached via strings, stakes or tapes, ribbons and foil often are used to complete the presentation.

Finally, most flower arrangements include a fair share of what in the industry is referred to as "artistic talent." Not only do floral designers contribute the physical labor of the handling and care of the flowers, but in many cases, designers share the experience of a floral design course or curriculum and years of experience. Many of the

industry trade shows include "floral design schools" where trained florists share ideas with beginners. Some florists even affiliate with the American Institute of Floral Designers or other organizations accrediting "superior floral talent."

### Quality Specifications

One of the biggest controversies in the industry today may very well be the issue of grades and standards. This issue is debatable because many in the industry maintain it to be a "dead subject"; yet, all recognize the importance of having quality flowers. The other bit of contention revolves around the establishment of any set of industry standards. Those whose product exceeds the minimum for the highest standard become incensed at the thought of their product being grouped with lesser specimens; those who do not have product meeting the minimum standards question the authority of anyone to establish the criteria involved and their decision making process in deciding what the archetypes for the industry should be.

The problem of grades and standards is not new. As far back as 1955, Warren Trotter, in his dissertation entitled "Problems in Marketing Florist Crops" (Cornell University) noted that standard grades for floral products had been considered for many years. Trotter [1955] also noted that grades had never been uniformly adopted. To say that problems of meeting a uniform minimum standard for the industry's produce still exist would be true; to say that no progress has been made since Trotter presented his conclusions would be debatable. Some localized, some species-particular and some individual producer grades have materialized. Many of these are based on the work of the North

Central Regional Committee established in 1956 by the USDA and the Society of American Florists to establish market grades and standards for many cut flowers [Anonymous, 1968]. Unfortunately, these grades and standards have not been uniformly adopted either.

Roses, for example, are usually marketed by stem length, with longer-stemmed flowers (supposedly) denoting a higher grade. Bud size, stem strength (as measured by a flower's deviation from the perpendicular) and, in some cases, degree of openness are also used to determine grade; graders will frequently shorten the flower stem's length when these other characteristics do not mesh with the stem length specifications of a superior grade. A few firms also use some kind of date coding on the flower wrappers to denote the date of cut. This, however, is often ridiculed by growers who insist that knowledge of the post-harvest handling conditions would provide a better determinant of a flower's quality than would knowledge of its date of cut.

Roses have been subjected to more work involving grades and standards than most flowers. Hence, they are usually graded, although grades are not necessarily uniform throughout the industry. Stem length is almost always denoted on the package wrap, and salesmen frequently sell by quoting stem lengths or even by pricing at so many cents over the stem length (e.g., \$0.30 over the stem would make a 20-inch rose sell for \$0.50 and a 30-inch rose sell for \$0.60, i.e., \$0.30 over one cent for each inch of stem length).

Many industry operators, however, argue that stem length has nothing to do with the flower's quality even at the time of cut. Nevertheless, it has been hypothesized that a correlation may exist between stem weight and what are considered desirable

flower characteristics. This hypothesis was forwarded by research work at Cornell University during the late 1940s. However, the research did not initially include roses. Roses were later adapted to the Cornell Standard Weight Grades by using weight per inch of stem. The grades were later renamed the Society of American Florists Standard Grades, but they have never been uniformly adopted [Trotter, 1955, pp. 68-69].

Roses, Inc., a trade organization of rose growers, has since established a set of grades based on 4-inch increments, which are widely used by the industry. One-, two- and three-inch variations of these are employed by various growers, however.

Some grading of carnations materialized as the prominence of the Denver Wholesale Florists grew in the 1960s. Eastern carnation growers had trouble competing with the excellent quality and yields of Colorado growers who had tremendously high amounts of winter sunlight. At the Colorado industry's peak, each top-grade carnation received a gold colored tag clipped around the flower's neck. Still today, Denver Wholesale Florists' carnations often received a two- to four-cent premium in the marketplace, perhaps due to their rigid grading practices. The organization's numbers have dwindled as California and South American producers have gained market dominance; however, the rigidity with which standards (which today conform to those of the Society of American Florists criteria) are applied and checked at Denver Wholesale Florists may still surpass that of elsewhere in the industry.

The Society of American Florists carnation grades are among the most widely referred to flower grades. The rigor of their application by various growers in the industry may leave much to be desired.

The grades are based on bloom size, stem length, straightness of stem and stem strength, as well as absence of defects in the flower.

The existence of grades for other flowers varies greatly. Some growers have, for example, packaged pompon chrysanthemums by a constant specified weight (e.g., 9, 14, 16, 20 or 22 ounces) and then use the number of stems per bunch to give some indication of quality. The implication was that the fewer stems needed to make up that weight signified higher quality flowers. Problems with such grading emerged when some growers began using five- and six-foot stem lengths in their bunches and only used two or three stems to "make the weight." Florists typically had to shorten the stems for most uses. Today, very few pompon chrysanthemums are marketed in weighed bunches. However, the methodology of weighing product has been widely adopted by many growers of some of the "filler flowers," e.g., *Gypsophila* (baby's breath) and statice (often bunched in 8-, 14- or 16-ounce bunches). Standard chrysanthemum growers typically size their flower heads, but these sizes may vary from grower to grower. Growers of snapdragons and gladioli frequently use a grading mechanism that relates length of the inflorescence to that of the entire stem. Orchids are sometimes graded by size of bloom. Any grades of other flowers are variable with the grower and often relate stem length or blossom size to the grade.

The interesting fact to note is that throughout the entire grading controversy, growers have consistently failed to implement such flower factors as are used in flower judging contests. This may change in the future as the Society of American Florists has announced plans to reformulate industry grades, basing the definitions of "quality" on flower judging criteria [Anonymous, 1982c]. Furthermore, no matter what



the current grading process presents to the market, flowers do get sold. There is never any indication of flower freshness, unless the flowers are dated. Yet, statements about freshness seem to be key marketing elements for sales, especially at wholesale and retail levels. Unless dated, however, there is almost no visual determination possible to be made about flower freshness as long as flowers fall within the marketable range, i.e., until noticeable deterioration occurs. As this marketable range may last up to several weeks for some species, there is much pertinent information lacking for the making of rational marketing decisions. As most of the flowers sold remain in the distribution system for at least a few days, a dating scheme could be a big asset for many.

Flower packaging in the industry is standardized for some species, even though the standards are very informal. Roses and carnations are typically packaged in bunches of 25 flowers. Gladioli, snapdragons and many of the bulb crops come in bunches of 10, while Marguerite daisies are usually found in bunches of 20 flowers. Miniature/spray carnations are usually bunched with 25 to 35 buds showing color at the time of packing. Many of the larger or more expensive flowers are sold by the piece, although packaging may depend on box or package size used and/or flower size, as in orchids, anthuriums, proteas, etc.

More on grades and standards will appear later in this dissertation to show how a more stringent quality classification might improve industry performance.

### Other Product Differentiation

Given identical quality, it is very difficult to differentiate between one flower of a certain cultivar and another flower of the same cultivar. Nevertheless, many claims of product differentiation have permeated the industry. While the majority of the claims do revolve around quality comparisons, some attempts at non-quality product differentiation have taken place. Some cut flower growers, shippers and wholesalers have tried to differentiate their flowers based on product handling. Advertisements such as "Member, Chain of Life Program" or Teleflora's adherence to the Good Housekeeping Guarantee are examples. More recently, some of the Colombian growers have trademarked various names for their carnations that have undergone various chemical preservative treatments. Israeli miniature/spray carnations have occasionally been marked, even at retail (in the mass market), in sleeves reading "Produce of Israel." Many other firms label flower sleeves, wrappers and boxes as well.

Other differentiating characteristics are evident to the experienced observer. Colorado carnations can usually be differentiated from most other domestically grown carnations because of the absence of any flower collar, type or band. (Most producers must use such binding around the flower's calyx due to the splitting that occurs from extreme variations in day and night temperatures.) Furthermore, all domestically produced carnations are sold completely open, whereas most of the South American imports are shipped in the bud stage and are not opened until they reach the wholesale or retail levels of the marketing system.

Other, perhaps less obvious cultural differences often denote the flowers of certain growers.

At the retail level, most florists print shop names on cards, envelopes, ribbons, plant saucers, care tags, wrapping and even delivery trucks in an effort to remind the customer of the plant's or arrangement's origin. Shop logos are repeated in store ads. In the Minneapolis/St. Paul, Minnesota, area, Bachman's, Inc., has used its company's purple color to such advantage that they have even received complaints from customers who have received flowers that were not wrapped with purple paper or that were not delivered in purple trucks [Bachman, 1981].

The wire services, too, have been aggressive in their efforts to differentiate member florists from those not so affiliated. Holiday centerpieces are often advertised as being available at member shops; these then take on an identical appearance to the advertised special, including the accessories, flowers and containers used. Cooperative holiday advertising between all area member shops underscores this differentiation.

Artistic styles of various shops or of various designers within any locale are often discernible to the trained eye as well. Whether it be a tendency to use or to avoid using certain species, colors or certain containers, such patterns become evident. Many designers have developed reputations for using certain dried materials, certain ribbon patterns or abundances of branches or vines in their work. This too can be considered a type of product differentiation, although perhaps sometimes unintentional.

Summary

This chapter has described the general commodity characteristics of both cut flowers and cut flower arrangements. Physical factors affecting cut flower production and marketing were illustrated with descriptions of the major cut flower species. Quality specifications as currently used in the industry were noted. The chapter ended with a brief discussion of other differentiating characteristics found in the industry.

Next, Chapter IV will discuss the national production and import trends and the geographic characteristics of the U.S. cut flower industry. A description of the shifts in the distribution of production will be outlined along with a discussion of international trade and world markets.

CHAPTER IV  
U.S. CUT FLOWER SUPPLY: DOMESTIC PRODUCTION, IMPORTS  
AND THE EFFECTS OF WORLD MARKETS

The trends in domestic floricultural crop production are very similar to some of the trends of all of U.S. agriculture, e.g., fewer producers, higher outputs per producer, minimal price movements for outputs but relatively large price increases for inputs, etc. Contributing to and, in some cases it may be argued, supplanting the domestic supply have been imports, most notably from Colombia, Holland and Israel. Other Latin American, European and African countries and others have contributed to the U.S. supply as well. This chapter will focus on the national production trends, the contributions of other countries to the U.S. supply and the status of international trade and world markets.

U.S. Cut Flower Supply: Domestic Crop Production  
and Import Competition

Domestic Production

The United States is the largest producer of floricultural products in the world. Yet, according to U.S. Department of Agriculture (USDA) data, domestic cut flower production has declined for most species in recent years. Table 4-1 shows that the number of U.S. produced blooms of standard carnations, standard and pompon chrysanthemums and snapdragons has declined. Less definite trends can be established for

Table 4-1. U.S. Domestic Production of Major Cut Flower Species: Number of Blooms, 1956-1980

Year	Number of States	Carnations <sup>a</sup>			Chrysanthemums			Gladiti	Roses <sup>a</sup>			Snapdragons	Anthrums	Growers' Sales <sup>b</sup>
		Standard	Miniature/ Spray	(1,000 bunches)	Standard	(1,000 blooms)	Pompon		Hybrid Tea	Miniature/ Sweetheart	(1,000 stems)			
		(1,000 blooms)					(1,000 bunches)	(1,000 spikes)		(1,000 blooms)				(\$1,000)
1956	47 <sup>c</sup>	--	--	(4) 180,951	(5) 31,463	(5) 10,577	(5) 215,496	--	--	(4) 175,933	--	--	--	1
1957	49/10 <sup>c</sup>	--	--	(9) 277,503	(10) 47,897	(10) 14,165	(10) 213,372	--	--	(9) 182,538	--	--	--	1
1958	49	--	--	256,887	--	--	14,746	--	--	161,597	--	--	--	2
1959	49	--	--	--	--	--	--	--	--	--	--	--	--	2
1960	49	--	--	--	--	--	--	--	--	--	--	--	--	2
1961	6	--	--	256,046	--	--	14,691	--	--	146,058	--	--	--	2
1962	6	--	--	277,656	--	--	15,135	--	--	160,706	--	--	--	2
1963	5	--	--	421,348	--	--	18,468	--	--	274,519	--	--	--	2
1964	11	--	--	439,189	--	--	22,127	--	--	276,573	--	--	--	2
1965	11	--	--	--	--	--	23,799	--	--	363,172	--	--	--	2
1966	23	--	--	531,856	--	--	28,433	--	--	363,172	--	--	--	2
1967	23	--	--	551,426	--	--	28,433	--	--	363,172	--	--	--	2
1968	23	570,427	--	1,614	133,312	27,560	308,976	--	--	363,172	--	--	--	2
1969	23	613,427	--	1,614	130,899	27,560	308,976	--	--	363,172	--	--	--	2
1970	23	553,157	--	1,614	130,899	27,560	308,976	--	--	363,172	--	--	--	2
1971	23	553,157	--	2,539	147,000	32,431	280,320	--	--	363,172	--	--	--	2
1972	23	554,355	--	2,539	144,706	34,455	284,664	--	--	363,172	--	--	--	2
1973	23	616,051	--	3,277	137,144	33,649	273,244	--	--	363,172	--	--	--	2
1974	23	601,763	--	3,874	138,243	36,129	234,768	--	--	363,172	--	--	--	2
1975	24	571,823	--	3,874	144,192	37,504	297,355	--	--	363,172	--	--	--	2
1976	24	571,823	--	4,715	144,192	37,504	297,355	--	--	363,172	--	--	--	2
1977	24	571,823	--	4,715	144,192	37,504	297,355	--	--	363,172	--	--	--	2
1978	24	571,823	--	4,715	144,192	37,504	297,355	--	--	363,172	--	--	--	2
1979	24	571,823	--	4,715	144,192	37,504	297,355	--	--	363,172	--	--	--	2
1980	24	571,823	--	4,715	144,192	37,504	297,355	--	--	363,172	--	--	--	2

<sup>a</sup> Data for years 1956-1967 did not differentiate standard from miniature/spray carnations or hybrid tea from miniature/sweetheart roses.

<sup>b</sup> Growers are included if they have at least the listed amount or more in gross sales of cut flowers, flowering and foliage plants, bedding plants or cultivated florists' greens.

<sup>c</sup> Number of states surveyed for each species is indicated in parentheses next to data for 1956 and 1957.

<sup>d</sup> A variable number of states estimated to represent 95 percent of production for any crop.

<sup>e</sup> Twenty-eight states surveyed but only "major producing states" reported for any crop.

<sup>f</sup> Preliminary.

SOURCE: USDA, Crop Reporting Board [1957-1981].

gladioli and hybrid tea and miniature/sweetheart roses, while production of miniature/spray carnations and anthuriums definitely seems to be on the rise.

The wholesale value of the various cut flower crops, at first, seems to have risen over the years (Table 4-2). On closer examination of Table 4-3, however, it becomes fairly obvious that domestic cut flower crop values have declined when one considers inflation. For standard carnations, standard and pompon chrysanthemums and snapdragons, the real wholesale values of crops produced over the last decade have declined. Miniature/spray carnations and anthuriums have experienced a real rise in value. Gladioli and hybrid tea and miniature/sweetheart roses displayed some decline in real wholesale value since 1972 but have exhibited more stability in the real value of late. Table 4-4, which shows nominal and deflated average wholesale value on a per flower basis, indicates that all species listed have experienced a decline in real value when flowers are examined singly.

Other data on the production of cut flowers cannot be as definitively tracked as the number of blooms and the wholesale value of the crops without some further assumptions. The USDA reporting methodology in the most recent years was to report data for states accounting for major portions of the production. At issue is whether or not there is a consistent or relatively consistent employment of factors for the remaining unreported segment of the industry. If one assumes that such is the case, further descriptions are possible. This will be assumed.

The number of domestic growers producing the various cut flower crops has fluctuated; for the most part, however, their numbers have dropped (Table 4-5). Rose producers and anthurium producers provide the

Table 4-2. U.S. Domestic Production of Major Cut Flower Species: Wholesale Value of Crops, 1956-1980

Year	Number of States	Carnations <sup>a</sup>		Chrysanthemums		Gladioli	Hybrid Tea	Roses <sup>a</sup>		Snapdragons	Anthuriums	Grocers' Sales <sup>b</sup>
		Standard	Miniature/ Spray	Standard	Pompon			Miniature/ Sweetheart	Miniature/ Sweetheart			
(\$1,000)												
1956	47/5 <sup>c</sup>	--	(4) 10,953	(5) 3,959	(5) 6,609	(5) 9,430	--	(4) 8,756	--	--	--	1
1957	49/10 <sup>c</sup>	--	(9) 15,722	(10) 6,900	(10) 10,553	(10) 11,572	--	(8) 14,230	--	--	--	1
1958	10	--	18,620	7,130	10,529	10,115	--	14,482	--	--	--	1
1959	10	--	15,841	7,457	9,508	10,303	--	12,581	--	--	--	2
1960	6	--	15,304	7,955	10,200	10,663	--	11,600	--	--	--	2
1961	6	--	17,060	7,983	10,502	11,876	--	12,164	--	--	--	2
1962	6	--	18,932	9,167	12,048	12,470	--	12,863	--	--	--	2
1963	15	--	20,116	15,445	15,941	14,548	--	25,298	--	--	--	2
1964	11	--	29,977	18,174	17,397	15,518	--	20,799	--	--	--	2
1965	11	--	37,625	23,320	22,158	18,860	--	40,738	--	--	--	2
1966	23	--	40,174	24,416	22,045	17,753	--	42,331	--	--	--	2
1967	23	43,270	1,628	26,426	25,636	21,115	--	8,988	--	--	--	2
1968	23	45,607	2,089	26,813	27,195	21,343	--	10,509	--	--	--	2
1969	23	43,742	2,504	26,952	26,651	19,140	--	12,017	--	--	--	2
1970	23	43,742	2,504	26,952	29,241	19,140	--	12,017	--	--	--	2
1971	23	43,442	2,602	27,516	29,241	19,140	--	12,017	--	--	--	2
1972	23	48,096	3,602	29,140	29,793	20,287	--	12,605	--	--	--	2
1973	23	45,964	3,642	29,813	32,967	19,514	--	12,960	--	--	--	2
1974	23	44,015	4,577	29,582	30,922	17,763	--	14,254	--	--	--	2
1975	22	43,212	4,701	29,371	31,093	17,158	--	13,753	--	--	--	2
1976	22	42,328	5,655	29,326	34,157	17,158	--	13,753	--	--	--	2
1977	28 <sup>e</sup>	45,713	5,625	29,326	35,479	16,535	--	16,504	--	--	--	10
1978	28 <sup>e</sup>	42,328	6,007	28,626	35,479	16,535	--	16,504	--	--	--	10
1979	28 <sup>e</sup>	42,394	6,729	31,920	37,957	16,248	--	20,639	--	--	--	10
1980 <sup>f</sup>	28 <sup>e</sup>	44,784	8,425	26,714	36,957	19,824	--	21,943	--	--	--	10
1981 <sup>f</sup>	28 <sup>e</sup>	41,880	8,989	25,923	37,609	21,765	--	21,943	--	--	--	10

<sup>a</sup>Data for years 1956-1967 did not differentiate standard from miniature/spray carnations or hybrid tea from miniature/sweetheart roses.

<sup>b</sup>Growers are included if they have at least the listed amount or more in gross sales of cut flowers, flowering and foliage plants, bedding plants or cultivated florists' greens.

<sup>c</sup>Number of states surveyed for each species is indicated in parentheses next to data for 1956 and 1957.

<sup>d</sup>A variable number of states estimated to represent 95 percent of production for any crop.

<sup>e</sup>Twenty-eight states surveyed but only "major producing states" reported for any crop.

<sup>f</sup>Preliminary.

SOURCE: USDA, Crop Reporting Board [1957-1981].



Table 4-3. U.S. Domestic Production of Major Cut Flower Species: Deflated Wholesale Value of Crops (1972 = 100), 1972-1980

Year	Index <sup>a</sup>	Carnations		Chrysanthemums		Gladioli	Roses		Snapdragons	Anthuriums
		Standard	Miniature/ Spray	Standard	Pompon		Hybrid Tea	Miniature/ Sweetheart		
----- (\$1,000) -----										
1972	100.0	48,096	3,602	29,140	29,793	20,287	47,439	12,205	--	--
1973	113.1	40,640	3,220	26,360	29,149	17,254	43,206	11,459	--	--
1974	134.4	32,749	3,406	22,010	23,007	13,961	39,907	10,606	--	--
1975	146.9	29,416	3,200	19,994	21,166	11,622	36,934	9,362	--	--
1976	153.7	29,651	3,660	19,090	24,223	11,163	38,291	10,189	--	--
1977	163.1	25,952	3,683	17,551	21,753	10,138	38,122	10,180	1,810	1,894
1978	175.7	24,242	3,830	18,167	22,146	9,248	39,311	10,248	1,632	2,585
1979	197.7	22,653	4,262	13,512	18,693	10,027	39,622	10,126	1,208	2,645
1980 <sup>b</sup>	225.7	18,556	3,983	11,486	16,663	9,643	37,098	9,722	1,179	2,621

<sup>a</sup>Producer price index, adjusted for 1972 = 100.0.

<sup>b</sup>Preliminary.

SOURCE: USDA, Crop Reporting Board [1973-1981].

Table 4-4. Nominal and Deflated (1967 Dollars) Per Flower Average Wholesale Value of Major Cut Flower Species, 1956-1980

Year	Standard		Miniature/Spray		Standard		Pompon		Gladol		Hybrid Tea		Miniature/Sweetheart		Snapdragons		Anemones	
	Nominal	Deflated	Nominal	Deflated	Nominal	Deflated	Nominal	Deflated	Nominal	Deflated	Nominal	Deflated	Nominal	Deflated	Nominal	Deflated	Nominal	Deflated
	(\$ per bloom)		(\$ per bunch)		(\$ per spike)		(\$ per bunch)		(\$ per spike)		(\$ per bunch)		(\$ per bunch)		(\$ per stem)		(\$ per dozen)	
1956	6.0	6.0	--	--	12.6	13.9	0.27	0.66	4.4	4.8	7.9	7.6	--	--	--	--	--	--
1957	6.5	6.5	--	--	14.9	15.8	0.30	0.75	4.5	4.8	7.8	8.4	--	--	--	--	--	--
1958	6.5	6.5	--	--	14.5	15.3	0.67	0.71	4.3	4.6	7.8	8.2	--	--	--	--	--	--
1959	6.2	6.2	--	--	14.4	15.2	0.69	0.73	4.3	4.6	7.8	8.3	--	--	--	--	--	--
1960	6.2	6.2	--	--	13.4	14.1	0.69	0.73	4.7	4.9	7.9	8.3	--	--	--	--	--	--
1961	6.1	6.1	--	--	13.9	14.7	0.70	0.74	4.9	5.2	8.0	8.5	--	--	--	--	--	--
1962	6.2	6.2	--	--	14.5	15.2	0.72	0.76	4.9	5.1	10.1	10.5	--	--	--	--	--	--
1963	6.0	6.0	--	--	16.8	17.4	0.73	0.76	4.9	5.1	10.1	10.5	--	--	--	--	--	--
1964	6.1	6.1	--	--	17.4	17.4	0.78	0.78	5.5	5.5	11.2	11.2	--	--	--	--	--	--
1965	7.1	7.1	--	--	18.3	18.3	0.80	0.80	5.8	5.8	13.7	13.7	--	--	--	--	--	--
1966	7.1	7.1	--	--	18.3	18.3	0.80	0.80	5.8	5.8	13.7	13.7	--	--	--	--	--	--
1967	7.3	7.3	1.01	0.96	19.6	18.4	0.83	0.78	6.2	6.2	13.7	12.7	9.1	8.9	--	--	--	--
1968	7.4	7.4	0.97	0.91	19.6	18.4	0.83	0.78	6.2	6.2	13.7	12.7	9.1	8.9	--	--	--	--
1969	7.3	7.3	1.00	0.91	18.3	16.6	0.82	0.74	6.7	6.0	13.6	12.3	9.2	8.3	--	--	--	--
1970	7.3	7.3	1.13	0.99	19.7	16.7	0.85	0.75	7.4	6.1	13.6	12.3	9.2	8.3	--	--	--	--
1971	7.5	7.5	1.13	0.99	21.2	16.7	0.89	0.75	7.4	6.2	15.3	12.8	10.0	8.4	--	--	--	--
1972	7.5	7.5	1.11	0.82	21.6	16.0	0.91	0.68	8.3	6.2	16.4	12.2	10.8	8.0	--	--	--	--
1973	7.3	7.3	1.18	0.74	20.5	12.8	0.82	0.51	8.4	5.2	16.9	10.5	11.5	7.2	--	--	--	--
1974	7.3	7.3	1.19	0.62	20.9	11.4	0.96	0.52	9.5	5.2	19.1	10.4	13.7	7.5	--	--	--	--
1975	7.3	7.3	1.18	0.62	20.9	11.4	0.96	0.52	9.5	5.2	19.1	10.4	13.7	7.5	--	--	--	--
1976	8.1	8.1	1.23	0.66	25.6	13.2	0.99	0.51	10.0	5.1	20.6	10.6	14.1	7.3	10.5	17.9	23.0	9.2
1977	8.1	8.1	1.29	0.66	25.7	12.3	1.03	0.49	10.9	5.2	22.5	10.8	15.0	7.5	20.3	10.5	23.0	9.8
1978	9.1	9.1	1.33	0.66	27.5	10.2	1.08	0.40	13.1	4.9	26.6	19.3	19.4	7.2	22.5	9.6	23.0	9.8
1979	11.0	11.0	1.53	0.57	27.5	10.2	1.08	0.40	13.1	4.9	26.6	19.3	19.4	7.2	26.0	9.7	23.3	8.7
1980	11.0	11.0	1.53	0.57	27.5	10.2	1.08	0.40	13.1	4.9	26.6	19.3	19.4	7.2	26.0	9.7	23.3	8.7

<sup>a</sup> Miniature/spray clonations were not differentiated until 1968. Hence, some influence upon standard clonation prices may have occurred prior to that time.

<sup>b</sup> Sweetheart clonations were not differentiated until 1960. Hence, some influence upon hybrid tea rose prices may have occurred prior to that time.

<sup>c</sup> Preliminary.

Source: USDA, Crop Reporting Board [1987-1981], nominal prices; USDA, ERS [1981] for Producer Price Index used to calculate deflated prices.

Table 4-5. U.S. Domestic Production of Major Cut Flower Species: Number of Producers, 1956-1980

Year	Number of States	Carnations <sup>a</sup>		Chrysanthemums			Roses <sup>a</sup>			Anthuriums	Snapdragons	Growers' Gross Sales <sup>b</sup>	
		Standard	Miniature/ Spray	Standard	Pompon	Glaudioli	Hybrid Tea	Miniature/ Sweetheart					
1956	4/5 <sup>c</sup>	--	(4)	571	--	(5)	594	(5)	700	(5)	333	--	1
1957	8/9/10 <sup>c</sup>	--	(9)	1,401	--	(10)	1,744	(10)	1,923	(10)	671	--	1
1958	10	--	--	1,454	--	--	1,779	--	1,989	--	620	--	1
1959	6	--	--	917	--	--	1,245	--	1,245	--	425	--	1
1960	--	--	--	--	--	--	--	--	--	--	--	--	2
1961	6	--	--	877	--	--	1,026	--	1,158	--	340	--	1
1962	6	--	--	841	--	--	969	--	1,071	--	318	--	1
1963	5	--	--	781	--	--	864	--	927	--	261	--	1
1964	11	--	--	1,803	--	--	2,282	--	2,352	--	487	--	2
1965	11	--	--	1,709	--	--	2,150	--	2,196	--	483	--	2
1966	23	--	--	2,183	--	--	2,984	--	2,988	--	431	--	2
1967	23	--	--	2,093	--	--	2,786	--	2,738	--	541	--	2
1968	23	1,930	345	--	2,459	2,660	492	347	376	241	--	--	2
1969	23	1,804	390	2,457	2,497	2,349	398	360	258	--	--	--	2
1970	23	1,717	443	2,243	2,349	2,349	366	367	284	--	--	--	2
1971	23	1,525	378	2,134	2,168	321	323	323	266	--	--	--	2
1972	23	1,325	346	1,955	1,932	271	317	317	237	--	--	--	2
1973	23	1,308	346	1,836	1,836	156	316	316	239	--	--	--	2
1974	22	958	301	1,402	1,380	176	300	300	231	--	--	--	2
-- <sup>d</sup>	--	594	210	1,119	1,278	87	256	205	--	--	--	--	10
1975	28 <sup>e</sup>	539	221	1,029	1,126	76	230	192	574	574	--	--	10
1976	28 <sup>e</sup>	503	217	990	1,154	82	237	198	619	619	--	--	10
1977	28 <sup>e</sup>	461	208	961	1,122	80	221	180	560	560	--	--	10
1978	28 <sup>e</sup>	418	210	853	1,061	69	221	177	528	528	--	--	10
1979	28 <sup>e</sup>	364	191	798	961	66	232	183	515	515	--	--	10

<sup>a</sup>Data for years 1956-1967 did not differentiate standard from miniature/spray carnations or hybrid tea from miniature/sweetheart roses.

<sup>b</sup>Growers are included if they have at least the listed amount or more in gross sales of cut flowers, flowering and foliage plants, bedding plants or cultivated florists' greens.

<sup>c</sup>Number of states surveyed for each species is indicated in parentheses next to data for 1956 and 1957.

<sup>d</sup>A variable number of states estimated to represent 95 percent of production for any crop.

<sup>e</sup>Twenty-eight states surveyed but only "major producing states" reported for any crop.

<sup>f</sup>Preliminary.

SOURCE: USDA, Crop Reporting Board [1957-1981].

exceptions, as the numbers of hybrid tea and miniature/sweetheart rose producers have been relatively stable for the last five years. The number of anthurium growers has increased each year since anthurium data have been collected.

USDA data suggest that the industry today is composed of different growers, or growers using different technologies, than the industry of only a few years ago. Table 4-6 shows a trend seen over just the last 10 years of increased output per producer. Although there is some fluctuation (which may be weather related, as much of the U.S. production area is composed of facilities with little or no protection), there is a trend for greater output per grower, i.e., larger growers prevail. This is quite noticeable for all of the major cut flowers. Snapdragon and anthurium producers have not followed suit, but data are limited for these two crops.

Data on production area are more definitive, with some limitations. Noting the disclaimer of footnote "c" on Table 4-7 about multiple cropping acreage only being counted once if for the same crop, one observes an increase in miniature/spray carnation and hybrid tea and miniature/sweetheart rose production areas. Furthermore, a drop in standard carnation and gladioli production areas can be detected. Although the table shows declines in standard and pompon chrysanthemum and snapdragon production areas, these three species are often multiple cropped. If one assumes multiple cropping habits have not changed, however, then a decline in production is evident. If, on the other hand, one assumes additional production is being achieved on smaller areas, then one could dispute this claim. The former, however, will be assumed here, as it is confirmed from personal observation and countless industry reports.

Table 4-6. U.S. Domestic Production of Major Cut Flower Species: Number of Flowers Produced Per Producer, 1971-1980

Year	Carnations <sup>a</sup>		Chrysanthemums <sup>a</sup>		Gladioli <sup>a</sup>	Roses <sup>a</sup>		Snapdragons <sup>a</sup>	Anthuriums <sup>a</sup>
	Standard	Miniature/ Spray	Standard	Pompon		Hybrid Tea	Miniature/ Sweetheart		
1971	386	7	68	16	887	955	453	--	--
1972	431	9	70	18	1,008	977	515	--	--
1973	514	11	77	20	1,073	941	504	--	--
1974	628	13	103	27	1,269	1,064	535	--	--
1975	945	19	121	38	2,164	1,196	547	--	--
1976	951	21	136	32	2,384	1,337	597	25	--
1977	958	22	113	31	2,019	1,270	596	21	358
1978	1,012	23	129	34	1,862	1,388	625	20	350
1979	973	29	130	35	2,170	1,389	660	20	339
1980	1,042	31	118	36	2,521	1,356	618	20	373

<sup>a</sup>Rounded to nearest whole number.

<sup>b</sup>Preliminary.

SOURCE: USDA, Crop Reporting Board [1971-1981].

Table 4-7. U.S. Domestic Production of Major Cut Flower Species: Production Area, 1,000 Square Feet (Gladioli in Acres), 1975-1980

Year <sup>a</sup>	Number of States <sup>b</sup>	Carnations <sup>c</sup>	Chrysanthemums <sup>c</sup>	Roses <sup>c</sup>			Gladioli <sup>c</sup>	Snapdragons <sup>c</sup>	Anthuriums <sup>c</sup>	Growers' Gross Sales <sup>d</sup>
		Standard	Miniature/ Spray	Standard	Pompon	Hybrid Tea	Miniature/ Sweetheart			
1975	55	28,729	2,522	23,421	40,655	23,470	5,048	--	--	> 10
1976	28	28,768	2,706	22,441	37,412	23,420	5,240	2,472	--	> 10
1977	28	27,549	3,143	19,327	37,389	--	--	2,300	8,630	> 10
1978	28	25,276	3,118	23,429	39,966	22,349	5,234	2,074	10,745	> 10
1979	28	24,555	3,506	17,268	37,503	22,937	5,665	1,747	11,869	> 10
1980 <sup>e</sup>	28	20,800	4,123	14,823	31,545	23,411	5,391	1,789	13,657	> 10

<sup>a</sup>Unavailable for previous years except for acres of gladioli.

<sup>b</sup>This includes whatever number of states are needed to account for the major share of the production (95% in 1975) for any species, although 28 states were surveyed.

<sup>c</sup>All areas are in 1,000 square feet except for gladioli which are measured in acres. Areas cultivated under multiple cropping techniques for the same crop are listed only once. However, multiple cropping for different crops finds the area listed under each crop group.

<sup>d</sup>Growers are included if they have sales of \$10,000 or more in gross sales of cut flowers, flowering and foliage plants, bedding plants or cultivated florists' greens.

<sup>e</sup>Preliminary.

SOURCE: USDA, Crop Reporting Board [1971-1981].

(There have been some reports of multiple cropping of both miniature/spray and standard carnations with bedding plants or other blooming plants. These are minor, however, and are not considered a factor at this time, as almost all carnation production still occurs as a multiple year venture in the U.S. However, future production habits may cause a discrepancy with these data, similar to the second (but not accepted) theory, for chrysanthemum and snapdragon production areas.) These production area figures and the associated hypotheses are further validated when one studies the data on number of flowers per 100 square feet (Table 4-8) and notes that no obvious trends exist in "production efficiencies." Again, weather may play a role in this observation, as much of the domestic production is in unprotected areas.

Production of other crops varies; USDA data do not exist to support any conclusions about trends. However, several persons in the industry have noted that there seems to be an increasing trend among growers to diversify and among florists to use as much variety as the marketplace provides. Raymond Joseph, in an August 1981 Wall Street Journal article entitled "Florists Enjoy New Growth with the Exotic," reported that even though the best-selling varieties were carnations and hybrid roses, sales of rarer blooms were increasing greatly. Personal observation finds many growers altering their product mix to include many additional varieties. In some cases, these changes mean that less of the "bread-and-butter" varieties are being grown so that space can be devoted to minor crops; in other cases, new space is acquired for the diversification. Much of the variability in product supply is provided by imported flowers, although Southern California and Hawaii provide a lot of the "exotic" varieties. These minor varieties unfortunately

Table 4-8. U.S. Domestic Production of Major Cut Flower Species: Number of Cut Flower Produced Per 100 Square Feet

Year	Carnations <sup>a</sup>		Chrysanthemums <sup>a</sup>		Gladioli <sup>a,b</sup>	Roses <sup>a</sup>		Snapdragons <sup>a</sup>	Anthuriums <sup>a</sup>
	Standard	Miniature/ Spray	Standard	Pompon		Hybrid Tea	Miniature/ Sweetheart		
	(blooms)	(bunches)	(blooms)	(bunches)	(spikes)	----- (blooms) -----		(stems)	(blooms)
1975	1,950	157	579	88	46	1,305	2,223	--	--
1976	1,800	175	626	95	50	1,313	2,189	586	--
1977	1,821	150	578	96	48	--	--	569	199
1978	1,845	157	531	95	46	1,373	2,148	574	188
1979	1,665	163	623	93	48	1,429	2,062	609	192
1980 <sup>c</sup>	1,824	142	636	110	55	1,344	2,098	573	186

<sup>a</sup>Areas cultivated under multiple cropping techniques are listed only once. However, multiple cropping for different crops finds the area listed under each crop grown.

<sup>b</sup>Gladioli production may not be directly comparable as these numbers were calculated by converting acreage data into square feet. Gladioli are more nearly farmed (in the strictest sense) than other floricultural crops, although such acreages, as all areas listed, are supposedly net cultivated areas.

<sup>c</sup>Preliminary.

SOURCE: USDA, Crop Reporting Board [1976-1981].



become almost reserved for use by large urban area florists; the inventorying of many additional minor crop varieties becomes too much of a financial burden for florists serving smaller populaces.

#### International Contributions to Domestic Supply

Cut flowers are being imported in ever increasing numbers. While cut flower imports did not really become a factor until the late 1960s and early 1970s, it was not until the mid-1970s that domestic growers began to feel tremendous competitive pressures. By the late 1970s, petitions were being filed against importing countries in hearings before the U.S. International Trade Commission [Nicholas, 1980a]. Throughout the process, growers went out of business, alleging unfair competition. Yet, retailers lauded the new flower arrivals, often questioning whether or not there would be a flower shortage in the 1980s, even with the additional imported supply [Nicholas, 1980b].

Imported flowers have, for the most part, been comprised of flowers of the major species. This has added to the pressures of less efficient domestic growers. Some growers have responded by diversifying; others have gone out of business or altered their production to other horticultural products. While progressive growers, who can afford to adopt improved cropping techniques, may be assured a niche in the industry, growers too cash poor to incorporate innovative techniques into their operations will be placed in an increasingly less competitive position in the marketplace. The latter will be under increased pressure in the future, as imports will increasingly dominate the flower supply picture for many species.

Table 4-9 shows the almost continual progression of U.S. imports of selected flowers. Tables 4-10, 4-11, 4-12 and 4-13, furthermore, exhibit the 1971-1980 U.S. market shares of domestic and imported carnations, standard chrysanthemums, pompon chrysanthemums and roses, respectively. In addition, these four tables detail per capita consumption of each of these major species for each year. Gladioli were not imported at all until 1980, and then imports amounted to only insignificant levels.

Carnations are now imported in the greatest numbers, and this species provides the most noted example of the effects imports can have on the domestic industry. In his Purdue University doctoral dissertation of August 1974, Jerry Robertson noted that California carnation producers would maintain an ". . . economic advantage . . . over producers in all other domestic and foreign production areas . . ." but that ". . . Latin American carnation producers had a competitive advantage over carnation producers in all other domestic production regions." He further noted, if current economic conditions and import duties prevailed, that ". . . Latin American producers have the potential to capture at least 24 percent of the carnation market" [Robertson, 1974, pp. 165-166]. Table 4-10 indicated that Robertson's forecast underestimated the outcome, as economic conditions have changed; imported carnations in 1980 made up the majority of U.S. supply.

Similar trends are seen in other crops. An almost continual increase in the foreign share of the standard chrysanthemum market has occurred since 1976, although there is evidence that there was some retrenching during previous years (Table 4-11). In pompon

Table 4-9. U.S. Imports of Selected Cut Flowers (rounded to nearest 1,000), 1971-1980

	1980	1979	1978	1977	1976	1975	1974	1973	1972	1971
	(1,000 stems unless otherwise noted)									
Carnations	388,839 <sup>a</sup>	376,511	346,134	280,549	204,188	162,268	179,969	132,220	56,153	33,244
Standard Chrysanthemums	22,411 <sup>b</sup>	20,446 <sup>b</sup>	18,416	18,803	17,563	17,384	25,892	23,362	15,866	11,393
Pompon Chrysanthemums <sup>b</sup>	38,342	36,441	177,769	138,467	114,262	75,293	64,308	42,119	25,241	12,326
Roses	44,497	34,965	16,447	10,209	6,245	4,192	3,551	3,404	1,676	1,038
Daisies	23,819	25,951	21,311	15,477	10,119	14,464	19,378	10,253	3,395	1,700
Orchids (blooms)	1,865	1,207	820	1,011	575	775	1,106	1,038	1,038	808
Statice	34,278	25,053	21,385	7,564	2,381	4,691	5,870	4,838	2,542	1,414
Tulips	3,410	3,916	2,186	1,031	1,867	1,966	1,885	2,347	1,856	--
Cornflowers	--	--	--	--	--	--	--	--	--	--
Freesia	2,209	--	--	--	--	--	--	--	--	--
Gladioli	825	--	--	--	--	--	--	--	--	--
Gypsophila	12,568	--	--	--	--	--	--	--	--	--
Iris	2,903	--	--	--	--	--	--	--	--	--
Lilac	286	--	--	--	--	--	--	--	--	--
Lilies	5,465	--	--	--	--	--	--	--	--	--

<sup>a</sup>Final 1980 (i.e., revised) data listed miniature carnations (560,000 bunches) separately for the first time. These have been added to standard carnations (383,234,000 blooms) at the rate of 1 bunch = 1 unit = 1 bloom for this table.

<sup>b</sup>The report switched to reporting bunches of pompon chrysanthemums beginning with the 1980 reports (reporting 1979 and 1980 figures). The conversion factor, however, seems to be six stems per bunch. Final 1979 figures reported 218,621,000 stems, which at year end were reported as 36,411,000 bunches. Dividing the stem figure by the bunch figure yields 6.00 stems per bunch, implying 230,770 (1980) and 210,466 (1979) stems, respectively.

SOURCE: USDA, AMS, Ornamental Crops: National Market Trends [Various issues].

Table 4-10. U.S. Market Share of Domestic and Imported Carnations and Per Capita Consumption, 1971-1980

Year	Resident U.S. Population	Imported	Share of Market	Domestic <sup>a</sup>	Share of Market	Totals	Per Capita Consumption
	(millions)	(1,000)	(%)	(1,000)	(%)	(1,000)	(blooms)
1971	206.2	33,244	5.3	591,450	94.7	624,694	3.03
1972	208.2	56,153	8.7	587,397	91.3	643,550	3.09
1973	209.9	132,220	17.6	619,328	82.4	751,548	3.58
1974	211.4	179,969	22.9	605,642	77.1	785,611	3.72
1975	213.1	162,268	22.3	565,354	77.7	727,622	3.41
1976	214.7	204,188	28.1	522,616	71.9	726,804	3.39
1977	216.4	280,549	35.6	506,502	64.4	787,051	3.64
1978	218.2	346,134	42.3	471,247	57.7	817,381	3.75
1979	220.1	376,511	47.6	414,678	52.4	791,189	3.59
1980	222.3	388,839	50.2	385,234	49.8	774,073	3.48

<sup>a</sup>Miniature carnation bunches have been added as one stem each throughout the domestic figures and for 1980 imports. Although not accurate, it is a consistent methodology for these purposes (to yield a trend).

SOURCE: Population estimates, U.S. Bureau of the Census, Current Population Estimates--Series p25 [various years]; imported carnation data, USDA, Ornamental Crops: National Market Trends [1971-1981]; domestic carnation data, USDA, Crop Reporting Board [1972-1981].

Table 4-11. U.S. Market Share of Domestic and Imported Standard Chrysanthemums and Per Capita Consumption, 1971-1980

Year	Resident U.S. Population	Imported	Share of Market	Domestic	Share of Market	Totals	Per Capita Consumption
	(millions)	(1,000)	(%)	(1,000)	(%)	(1,000)	(blooms)
1971	206.2	11,398	7.3	144,706	92.7	156,104	.76
1972	208.2	15,866	10.4	137,144	89.6	153,010	.73
1973	209.9	23,352	14.4	138,243	85.6	161,595	.77
1974	211.4	25,892	15.2	144,042	84.8	169,934	.80
1975	213.1	17,384	11.4	135,715	88.6	153,099	.72
1976	214.7	12,560	8.2	140,397	91.8	152,957	.71
1977	216.4	18,803	14.4	111,738	85.6	130,541	.60
1978	218.2	18,416	12.9	124,424	87.1	142,840	.65
1979	220.1	20,448	16.0	107,578	84.0	128,026	.58
1980	222.3	22,411	19.2	94,205	80.8	116,616	.52

SOURCE: Population estimates, U.S. Bureau of the Census, Current Population Estimates--Series p25 [various years]; imported standard chrysanthemum data, USDA, Ornamental Crops: National Market Trends [1971-1981]; domestic standard chrysanthemum data, USDA, Crop Reporting Board [1972-1981].

Table 4-12. U.S. Market Share of Domestic and Imported Pompon Chrysanthemums and Per Capita Consumption, 1971-1980

Year	Resident U.S. Population (millions)	Imported (1,000)	Share of Market (%)	Domestic (1,000)	Share of Market (%)	Totals (1,000)	Per Capita Consumption (bunches)
1971	206.2	2,054	5.6	34,455	94.4	36,509	.18
1972	208.2	4,207	11.1	33,649	88.9	37,856	.18
1973	209.9	7,032	16.3	36,129	83.7	43,161	.21
1974	211.4	10,725	22.1	37,864	77.9	48,589	.23
1975	213.1	12,632	26.1	35,708	73.9	48,340	.23
1976	214.7	19,127	34.9	35,603	65.1	54,730	.25
1977	216.4	23,078	39.1	35,936	60.9	59,014	.27
1978	218.2	29,628	43.9	37,892	56.1	67,520	.31
1979	220.1	36,441	51.0	34,992	49.0	71,433	.32
1980	222.3	38,342	52.4	34,791	47.6	73,133	.33

SOURCE: Population estimates, U.S. Bureau of the Census, Current Population Estimates--Series P25 [various years]; imported pompon chrysanthemum data, USDA, Ornamental Crops: National Market Trends [1971-1981]; domestic pompon chrysanthemum data, USDA Crop Reporting Board [1972-1981].

Table 4-13. U.S. Market Share of Domestic and Imported Roses and Per Capita Consumption, 1971-1980

Year	Resident U.S. Population	Imported	Share of Market	Domestic <sup>a</sup>	Share of Market	Totals	Per Capita Consumption
	(millions)	(1,000)	(%)	(1,000)	(%)	(1,000)	(blooms)
1971	206.2	1,038	0.2	428,815	99.8	429,853	2.08
1972	208.2	1,676	0.4	431,603	99.6	433,279	2.08
1973	209.9	3,404	0.8	417,768	99.2	421,172	2.00
1974	211.4	3,551	0.8	442,814	99.2	446,365	2.11
1975	213.1	4,192	1.0	418,500	99.0	422,692	1.98
1976	214.7	6,245	1.5	422,273	98.5	428,518	2.00
1977	216.4	10,209	2.4	419,130	97.6	429,339	1.98
1978	218.2	16,447	3.8	419,255	96.2	435,702	2.00
1979	220.1	34,965	7.3	444,620	92.7	479,585	2.16
1980	222.3	44,497	9.4	427,778	90.6	472,275	2.12

<sup>a</sup>Hybrid Tea and Miniature/Sweetheart Roses have been added.

SOURCE: Population estimates, U.S. Bureau of the Census, Current Population Estimates--Series P25 [various years]; imported rose data, USDA, Ornamental Crops: National Market Trends [1971-1981]; domestic rose data, USDA, Crop Reporting Board [1972-1981].

chrysanthemums (Table 4-12), the increase in imports has been smooth and continuous. Imported pompon chrysanthemums accounted for over 52 percent of domestic supply in 1980. Domestic rose producers seem to be fighting the inevitable in the greenhouse (as well as legal battles in the courts), as domestic production has not yielded much to the imports in terms of output numbers (Table 4-13); however, the growth in exports to the U.S. has been noted in the market share, as 1980 U.S. rose imports amounted to over 9 percent of domestic supply. The 1981 estimates are for even higher import numbers. Preliminary rose import data for the first six months of 1981 indicate imports were 50.1 percent ahead of the similar 1980 period (Table 4-14).

Many minor crops are also imported. If florists continue their diversification efforts, imports will likely increase in numbers and varieties. The list of countries supplying them will probably grow as well. Although many domestic growers are attempting to alter their product lines to satisfy florists' (and consumers') desires, the consuming public's quest for new and different product material seems insatiable [Joseph, 1981]. Domestic producers will, no doubt, have difficulty providing all of the product mix alone. Table 4-14 also supports this, as 1981's first six months saw considerably more imports than for the similar period of 1980.

Tables 4-10 through 4-13 show that, even with the added product that imports contribute to domestic supplies, per capita consumption has not changed too drastically over the last decade for any crop. Small changes on a per capita basis, spread over more than 220 million persons, however, may be considered significant. Carnation consumption seems cyclical. The 1970s decade began with just over three carnations



Table 4-14. U.S. Imports of Ornamentals--Comparison of First Six Months'  
Figures for 1981 and 1980

Crop and Major Exporting Countries	Six Months, 1981 <sup>a</sup>	Six months, 1980 <sup>a</sup>
<u>Carnations:</u>		
Colombia	250,686	196,393
Mexico	13,497	6,945
Chile	1,105	--
Netherlands	166	155
Others	618	3,036
Totals	266,072	206,529
<u>Miniature Carnations (bunches):</u>		
Israel	2,370	2,947
Netherlands	415	699
Colombia	368	589
Mexico	171	70
Peru	165	--
Italy	42	--
Others	3	44
Totals	3,534	4,349
<u>Standard Chrysanthemums:</u>		
Colombia	9,856	10,107
Guatemala	382	1,431
Netherlands	206	251
Mexico	197	133
Peru	37	18
Others	297	85
Totals	10,975	12,205
<u>Pompon Chrysanthemums (bunches):</u>		
Colombia	20,832	19,795
Guatemala	647	119
Peru	529	268
Ecuador	209	168
Mexico	135	91
Dominican Republic	65	12
Costa Rica	61	174
Others	307	85
Totals	22,785	20,712

Table 4-14. Continued

Crop and Major Exporting Countries	Six Months, 1981 <sup>a</sup>	Six Months, 1980 <sup>a</sup>
<u>Roses:</u>		
Colombia	29,946	19,541
Israel	3,795	3,397
Netherlands	1,468	1,060
Guatemala	716	405
Dominican Republic	445	48
Mexico	433	110
Others	905	569
Totals	37,708	25,130
<u>Chamaedorea:</u>		
Mexico	154,326	155,618
Guatemala	41,220	61,183
Others	606	625
Totals	196,152	217,426
<u>Cornflowers:</u>		
Mexico	15	4
Others	1	2
Totals	16	6
<u>Daisies:</u>		
Colombia	13,630	10,467
Mexico	2,908	3,071
Netherlands	1,201	547
Others	756	590
Totals	18,495	14,675
<u>Freezia:</u>		
Netherlands	2,554	1,297
Others	32	53
Totals	2,586	1,350
<u>Gladioli:</u>		
Mexico	527	65
Others	20	686
Totals	547	751

Table 4-14. Continued

Crop and Major Exporting Countries	Six Months, 1981 <sup>a</sup>	Six Months, 1980 <sup>a</sup>
<u>Gypsophila:</u>		
Colombia	8,028	4,937
Peru	703	--
Mexico	252	387
Chile	62	--
Others	946	894
Totals	9,991	6,218
<u>Iris:</u>		
Netherlands	3,442	1,647
Others	405	77
Totals	3,847	1,721
<u>Leatherleaf:</u>		
Guatemala	136	264
Others	105	270
Totals	241	534
<u>Lilac:</u>		
Netherlands	166	119
Others	--	46
Totals	166	165
<u>Lilies:</u>		
Netherlands	3,381	1,325
Colombia	1,627	541
Mexico	24	10
Others	27	91
Totals	5,059	1,967
<u>Miscellaneous Ferns:</u>		
Guatemala	32,408	3,714
Costa Rica	18	1,209
Others	506	921
Totals	32,932	5,844

Table 4-14. Continued

Crop and Major Exporting Countries	Six Months, 1981 <sup>a</sup>	Six Months, 1980 <sup>a</sup>
<u>Orchids, Cymbidiums (blooms):</u>		
Netherlands	10	2
Australia	2	2
Others	<u>1</u>	<u>8</u>
Totals	13	12
<u>Orchids (others):</u>		
Thailand	567	211
Singapore	388	210
Others	<u>95</u>	<u>58</u>
Totals	1,050	479
<u>Statice:</u>		
Colombia	16,328	18,820
Mexico	1,190	562
Israel	133	179
Others	<u>799</u>	<u>821</u>
Totals	18,450	20,382
<u>Tulips:</u>		
Netherlands	5,412	2,969
Others	<u>319</u>	<u>19</u>
Totals	5,731	2,988
<u>Other Ornamentals:</u>		
Netherlands	2,920	1,202
Colombia	2,913	2,329
Israel	1,693	750
Mexico	925	1,038
Others	<u>539</u>	<u>130</u>
Totals	8,990	5,449

<sup>a</sup>Six months figures are through July 4 for each year. The 1981 figures are preliminary. All figures are for thousands of stems unless otherwise noted.

SOURCE: USDA, Ornamental Crops: National Market Trends [various issues, 1980, 1981].

consumed per person; per capita consumption moved to almost seven-tenths of a carnation higher, fluctuated and then ended the decade at about 3.5 carnations consumed per person. At the same time, total supply increased by about 1.5 million carnations and the U.S. population increased by 16.1 million people.

Standard chrysanthemum consumption has trended downward in both absolute supply and per capita consumption figures; consumption stood at about 117 million blooms and a half bloom per capita in 1980, down from about 156 million blooms and a three-fourths bloom consumption rate a decade earlier. At the same time, annual pompon chrysanthemum consumption increased to about 73.1 million bunches; this represented over a doubling during the 1970s of both absolute supply and per capita consumption figures. Pompon chrysanthemum consumption had risen to about one-third of a bunch per person annually during the 1970s decade. One might suggest that there has been a change in the form of use, as the drop in standard chrysanthemum consumption nearly parallels the rise seen in pompon chrysanthemum use. Differences in cultivars and some uses (standards being used as focal points of an arrangement while pompons are sometimes used as filler flowers), however, may negate this theory.

Per capita rose consumption barely changed over the 1970s decade. About two roses were consumed per person annually throughout the period. Domestic rose production did not fluctuate even 27 million stems during the entire period, but imports rose over 43 million flowers. Total supply fluctuated less than 60 million flowers.

Although not noted in these tables, gladiolus consumption was nearly halved on a per capita basis during the 1970s (down to 0.75

spikes per capita in 1980 from 1.38 spikes per capita in 1971) [U.S. Bureau of the Census, Current Population Estimates--Series P25, 1980; USDA, Ornamental Crops: National Market Trends, 1980; USDA, Floriculture Crops, 1972-1981].

In addition to cut flower species, many cut florists' greens are imported. Chamaedorea palm has been imported for many years. There was a drop of 10.6 percent in Chamaedorea imported in 1980 when compared to 1979 (399.5 million stems in 1980 versus 446.7 million stems in 1979). The first six months of 1981 showed a continued drop occurring in Chamaedorea imports (Table 4-14). However, the amount of Chaemaedorea imported over the 1976-1980 period did average higher than for the first part of the 1970s decade. Leatherleaf and other mixed ferns were also imported. Although leatherleaf imports for the first six months of 1981 were less than half of the amount imported for a similar period for 1980, miscellaneous fern imports were up by over 463 percent during the period (Table 4-14).

Flower availability is probably the main reason Florists' Trans-world Delivery Association (FTD) fought the growers' petitions to curtail imports and/or to add duties to imported flowers. In a March 1980 article in Florist magazine, an FTD publication, Susan Nicholas offers the thought that flowers may be in short supply in the 1980s. Factors such as transportation deregulation, oil prices (heating) and spiraling land values are mentioned as reasons why some domestic growers may simply sell out; such may occur even in the traditionally high domestic production areas. Nicholas further points out that there are already certain times of the year where certain species are in short supply, even with the imports. Although reported shortages often occur

in areas not serviced by large wholesalers, Nicholas [1980b] cites cases where quality merchandise and variety have been limited in even large metropolitan areas.

Economics also attracts florists to foreign merchandise. Imported flowers, priced with shipping costs added, often can be priced below the domestically produced merchandise. Domestically produced flowers may also incur greater transportation costs to some parts of the nation [Nicholas, 1980b]. If attitudes in the retail sector continue to favor imports in at least some circumstances, and if views supporting free trade and third world development are sustained among U.S. government politicians [Cheshire, 1982], one could easily forecast an uninterrupted increase in flower imports.

#### Cut Flower Industry: Geographic Changes

##### A Trend Toward Centralization

Much of the floriculture industry in the United States has experienced a shift toward centralization over the last several decades, whether speaking of the retailing, wholesaling or producing sectors. The vast majority of the cut flower crops domestically produced hails from a few selected states. Even imports enter through and are distributed from a small number of airports in the U.S. Bulkier floricultural items such as flowering potted plants and bedding plants remain somewhat more decentralized with production often occurring closer to consumption, however.

Weight of the crop, as well as difficulties associated with packaging and shipping a crop damage-free, have helped to preserve the niche

of local growers involved in bedding plant or potted blooming plant production. Many former cut flower producers now engage in production of these commodities. As a result, potted blooming plants and bedding plants are often purchased by retailers from local sources.

Cut flowers, however, do not have the same weight considerations as do potted blooming or bedding plants. Not only are containers and soil not shipped with cut flowers, but partial dehydration of flowers, which often occurs after harvest, reduces water weight as well. Furthermore, even fragile cut flowers, when packaged in bunches with protective wrapping, can be shipped satisfactorily with relatively minimal space requirements on a per flower basis. It is because of this relative simplicity in handling and the improved transportation facilities of air-carriers and the interstate highway system that cut flower producers have been able to isolate themselves nearer to sources of other inputs needed for production. This compares with the former practice of locating relatively close to final consumer markets.

At the retail level, there has even been a certain tendency to centralize with the development of large regional shopping malls, or business districts in many towns. Shopping centers, aimed at presenting a variety of shops to the public at a centralized location, were an overnight success. In many cases, inner cities have been denuded of private retail businesses as a result. Retail florists in many cities have modified their businesses to include locations near or in these shopping center sites [FTD, 1977].

On a grander scale, one will find that retailers have moved to the cities, following the urbanization of America. As rural residents



become a smaller and smaller proportion of the total population, rural florists become even more rare. Hence, centralization occurs.

As retailers move to cities to service their customers, wholesalers too have moved to service their clientele, the retailers. Wholesalers have consolidated their operations in some instances; in other cases, larger wholesalers have scattered branches so as to better serve their retail clients. Other middlemen have moved closer to sources of supply, or even joined forces with growers to act as their shipping agents. Due to improved transportation and handling, many former market channel members may no longer be needed. As populations have migrated to the large urban areas, the wholesaling sector has found it easier to consolidate operations.

#### Regional Centralization of Production

Among the factors often considered when locating cut flower production facilities are availability of adequate light and adequate energy sources (for warmth), nearness to good transportation routes and availability of adequate transportation facilities and availability of adequate amounts of other inputs such as land, labor, water, capital and, in some cases, materials suitable for growing media. Favorable tax rates, zoning and other government-influenced conditions also attract businesses. It is probably availability of adequate light and energy that has caused many growers to migrate to areas of warm, bright climates, e.g., Florida, California and (formerly) high light areas such as Denver, Colorado. Several other of the mentioned factors, especially land costs, favorable (or negligible) zoning requirements and satisfactory levels of water and/or taxes often encourage establishment of

production facilities in rural areas. Adequate transportation facilities and routes and adequate labor supplies often find production facilities locating not too distant from population centers, although these may be lesser influences today than formerly.

USDA data tend to confirm this phenomenon. Domestic carnation production, for example, was centered in five states in 1958, according to USDA figures. Table 4-15 shows that California, Colorado, New York, Illinois and Ohio accounted for 96.4 percent of the reported production with California and Colorado producing 70 percent of the total alone in 1958. By 1964, California and Colorado had expanded their carnation outputs by 65 percent and 49 percent, respectively, although their portion of total production had dropped to 66.5 percent of the total. Total reported production had increased by 68 percent with Pennsylvania, Massachusetts and New York completing the list of the top five producers. It should be noted that 1964 data included 11 states in the survey, rather than only the 10 states reported in 1958.

The 1970 data show still another change in survey methodology as carnation production was reported separately for standard and miniature/spray varieties. Also, by 1970, 23 states were surveyed. California and Colorado output still dominated production of both standard and miniature/spray varieties in 1970, and both states' production along with total U.S. production, had grown significantly since the mid-1970s. Pennsylvania, Massachusetts and Ohio completed the list of the top five standard carnation producers, while Massachusetts, Connecticut and Pennsylvania have this honor for miniature/spray carnation production.

The early 1970s brought the first large influx of flower imports; carnations were the species leading the charge. The 1975 data reflect

Table 4-15. Top Five Producing States of Standard and Miniature/Spray Carnations for Selected Years

State	Amount Sold		Producers		Wholesale Value	
	(1,000)	(%) <sup>a</sup>	(Number)	(%) <sup>a</sup>	(\$1,000)	(%) <sup>a</sup>
<u>All Carnations (blooms)</u>			<u>1958</u>			
California	114,251	44.4	180	12.4	5,484	32.9
Colorado	66,598	25.9	122	8.4	5,528	33.1
New York	29,190	11.3	308	21.2	1,978	11.9
Illinois	20,587	8.0	224	15.4	1,400	8.4
Ohio	17,425	6.8	314	21.6	1,481	8.9
Other	9,243	3.6	306	21.0	809	4.9
10-state total	257,294	100.0	1,454	100.0	16,680	100.0
<u>All Carnations (blooms)</u>			<u>1964</u>			
California	188,819	43.6	205	11.4	9,428	33.5
Colorado	99,136	22.9	147	8.2	7,357	26.1
Pennsylvania	35,450	8.2	333	18.5	2,843	10.1
Massachusetts	34,860	8.0	160	8.9	2,641	9.4
New York	20,591	4.8	250	13.9	1,370	4.9
Other	54,492	12.6	708	39.3	4,531	16.1
11-state total	433,348	100.0	1,803	100.0	28,170	100.0
<u>Standard Carnations (blooms)</u>			<u>1970</u>			
California	344,539	55.7	294	17.1	21,017	46.6
Colorado	152,221	24.6	168	9.8	12,482	27.6
Pennsylvania	26,105	4.2	216	12.6	2,584	5.7
Massachusetts	23,289	3.8	90	5.2	2,026	4.5
Ohio	14,507	2.3	169	9.8	1,349	3.0
Other	58,391	9.4	780	45.4	5,694	12.6
23-state total	619,052	100.0	1,717	100.0	45,152	100.0

Table 4-15. Continued

State	Amount Sold		Producers		Wholesale Value	
	(1,000)	(%) <sup>a</sup>	(Number)	(%) <sup>a</sup>	(\$1,000)	(%) <sup>a</sup>
<u>Miniature/Spray</u>						
<u>Carnations</u> (bunches)			<u>1970</u>			
California	1,032	40.7	68	15.4	878	34.7
Colorado	285	11.2	39	8.8	369	14.6
Massachusetts	254	10.0	42	9.5	290	11.4
Connecticut	158	6.2	34	7.7	231	9.1
Pennsylvania	141	5.6	56	12.6	198	7.8
Others	669	26.4	204	46.1	568	22.4
23-state total	2,539	100.0	443	100.0	2,534	100.0
<u>Standard Carnations</u> (blooms)			<u>1975</u>			
California	380,708	65.8	248	27.8	25,507	56.4
Colorado	154,923	26.8	131	14.7	14,563	32.2
Pennsylvania	12,165	2.1	94	10.6	1,399	3.1
Massachusetts	5,549	1.0	34	3.8	683	1.5
Ohio	4,937	0.9	78	8.8	657	1.5
Others	20,585	3.6	306	34.3	2,383	5.3
22-state total	578,867	100.0	891	100.0	45,192	100.0
<u>Miniature/Spray</u>						
<u>Carnations</u> (bunches)			<u>1975</u>			
California	2,260	54.6	70	23.2	2,237	45.2
Colorado	836	20.2	41	13.6	1,112	22.5
Florida	290	7.0	5	1.7	356	7.2
Massachusetts	273	6.6	23	7.6	412	8.3
Pennsylvania	142	3.4	32	10.6	277	5.6
Others	335	8.1	131	43.4	554	11.2
22-state total	4,136	100.0	302	100.0	4,948	100.0

Table 4-15. Continued

State	Amount Sold		Producers		Wholesale Value	
	(1,000)	(%) <sup>a</sup>	(Number)	(%) <sup>a</sup>	(\$1,000)	(%) <sup>a</sup>
<u>Standard Carnations (blooms)</u>			<u>1980</u>			
California	288,044	75.9	179	49.2	28,228	67.4
Colorado	79,850	21.0	79	21.7	11,658	27.8
Pennsylvania	4,510	1.2	50	13.7	834	2.0
North Carolina	4,493	1.2	8	2.2	665	1.6
Ohio	1,726	0.5	39	10.7	345	0.8
Others	752	0.2	9	2.5	150	0.4
Major state total	379,375	100.0	364	100.0	41,880	100.0
<u>Miniature/Spray Carnations (bunches)</u>			<u>1980</u>			
California	4,246	72.5	98	51.3	5,775	64.3
Colorado	1,107	18.9	35	18.3	2,225	24.8
Florida	192	3.3	3	1.6	319	3.6
Massachusetts	105	1.8	7	3.7	167	1.9
Pennsylvania	105	1.8	24	12.6	260	2.9
Others	104	1.8	24	12.6	243	2.7
Major state total	5,859	100.0	191	100.0	8,989	100.0

<sup>a</sup>Percentages may not add to 100 percent due to rounding.

SOURCE: USDA, Crop Reporting Board [various years].

this as total standard carnation production declined. (It should be noted that 1975 data only include surveys of 22 states.) Although California and Colorado reports show increases of 10.5 percent and 1.8 percent in standard carnation production, respectively, this growth was insignificant relative to their previous records. Pennsylvania, Massachusetts and Ohio again rounded out the list of the top five producing states, but production for all three of these states declined over the period. The miniature/spray carnation production picture over this period was not as gloomy, however, as almost 1.6 million more bunches were sold in 1975 than in 1970. During a similar period, carnation imports increased about five-fold from 33.2 million stems in 1971 to 162.2 million stems in 1975.

The 1980 data finished this story. By 1980, 394.2 million carnations were imported. This represented over half of the domestic supply, as just over 379 million standard carnations and 5.8 million bunches of miniature/spray carnations were domestically produced. California and Colorado accounted for nearly 97 percent of the domestic standard carnation production, with California representing over three-fourths of the production by itself.

As California and Colorado data suggest, moderate weather and high light intensities are definitely competitive advantages for carnation production. These same moderate weather and high light intensities are now contributing to the competitive advantages of other countries, notably Colombia, in carnation production. Such countries are likely to continue making inroads into U.S. markets.

California is our nation's leading supplier of standard chrysanthemums, foreign or domestic, and it has been for some time.

California has accounted for over half of the domestic crop since 1969, and California alone accounted for over three-fourths of the domestically produced crop in 1980. Its 73 million-plus blooms in 1980 were more than all imports combined. As Table 4-16 shows, California standard chrysanthemum production peaked in the mid-1970s, as did total national production. More recently, however, the standard chrysanthemum production of almost all states seems to be on the wane, giving California a more dominant role even with less production. The average California producer also seems to be a much larger producer than most, as the 17.5 percent of the nation's growers in 1980 who were in California accounted for 77.7 percent of the reported national output. Over most of the last decade, Ohio and North Carolina have followed California as the second and third leading producers, respectively; together these states produced less than 10 percent of the domestic standard chrysanthemum crop in 1980.

Florida and California had vied for top pompon chrysanthemum producing honors for the last quarter century (Table 4-17). California finally overtook Florida as the top domestic producer in 1973, as California's production continued to rise, while Florida's production, in the face of fast rising South American imports (mainly from Colombia), ebbed. It was in the early 1970s that the South American imports of pompon chrysanthemums outdistanced the Florida production. By 1979, importers overtook all domestic pompon chrysanthemum producers as the chief source of supply. In 1980, California produced nearly four times the number of pompon chrysanthemums as Florida, although the 18 growers (1.8 percent of the nation's producers) who worked in Florida produced 18 percent of the nation's output. This compares with 178

Table 4-16. Top Five Producing States of Standard Chrysanthemums for Selected Years

State	Blooms Sold		Producers		Wholesale Value	
	(1,000)	(%) <sup>a</sup>	(Number)	(%) <sup>a</sup>	(\$1,000)	(%) <sup>a</sup>
<u>1958</u>						
California	27,987	58.4	139	7.8	2,827	39.7
Illinois	5,715	11.9	308	17.3	1,240	17.4
Ohio	4,958	10.4	424	23.8	1,076	15.1
New York	4,866	10.2	421	23.7	1,099	15.4
Michigan	1,280	2.7	237	13.3	289	4.1
Others	<u>3,091</u>	<u>6.5</u>	<u>250</u>	<u>14.1</u>	<u>599</u>	<u>8.4</u>
10-state total	47,897	100.0	1,779	100.0	7,130	100.0
<u>1964</u>						
California	46,395	47.8	166	7.3	5,480	34.6
Ohio	12,114	12.5	382	16.7	2,597	16.4
Pennsylvania	7,614	7.9	433	19.0	1,635	10.3
Florida	6,649	6.9	23	1.0	940	5.9
New York	6,097	6.3	391	17.1	1,391	8.8
Others	<u>18,107</u>	<u>18.7</u>	<u>887</u>	<u>38.9</u>	<u>3,802</u>	<u>24.0</u>
11-state total	96,976	100.0	2,282	100.0	15,845	100.0
<u>1970</u>						
California	81,465	55.4	206	9.2	10,590	39.3
Ohio	10,118	6.9	256	11.4	2,610	9.7
Florida	9,270	6.3	32	1.4	1,863	6.9
Pennsylvania	6,987	4.7	280	12.5	1,824	6.8
North Carolina	6,130	4.2	54	2.4	1,312	4.9
Others	<u>33,030</u>	<u>22.5</u>	<u>1,415</u>	<u>63.1</u>	<u>8,726</u>	<u>32.4</u>
23-state total	147,000	100.0	2,243	100.0	26,925	100.0



Table 4-16. Continued

State	Blooms Sold		Producers		Wholesale Value	
	(1,000)	(%) <sup>a</sup>	(Number)	(%) <sup>a</sup>	(\$1,000)	(%) <sup>a</sup>
<u>1975</u>						
California	93,328	67.0	189	14.0	15,959	52.2
Ohio	8,771	6.3	190	14.1	2,623	8.6
North Carolina	6,560	4.7	36	2.7	1,679	5.5
Pennsylvania	5,398	3.9	151	11.2	1,959	6.4
Florida	3,980	2.9	14	1.0	1,126	3.7
Others	<u>21,303</u>	<u>15.3</u>	<u>766</u>	<u>56.9</u>	<u>7,219</u>	<u>23.6</u>
22-state total	139,340	100.0	1,346	100.0	30,565	100.0
<u>1980</u>						
California	73,169	77.7	140	17.5	16,097	62.1
Ohio	5,361	5.7	117	14.7	2,412	9.3
North Carolina	3,748	4.0	30	3.8	1,473	5.7
Pennsylvania	3,059	3.3	119	14.9	1,609	6.2
New York	1,902	2.0	103	12.9	865	3.3
Others	<u>6,966</u>	<u>7.4</u>	<u>289</u>	<u>36.2</u>	<u>3,467</u>	<u>13.4</u>
Major state total	94,205	100.0	789	100.0	25,923	100.0

<sup>a</sup>Percentages may not add to 100.0 percent due to rounding.

SOURCE: USDA, Crop Reporting Board [various years].

Table 4-17. Top Five Producing States of Pompon Chrysanthemums for Selected Years

State	Bunches Sold		Producers		Wholesale Value	
	(1,000)	(%) <sup>a</sup>	(Number)	(%) <sup>a</sup>	(\$1,000)	(%) <sup>a</sup>
<u>1958</u>						
Florida	7,172	48.2	42	2.1	5,522	52.5
California	2,928	19.7	214	10.8	1,025	9.7
New York	1,532	10.3	502	25.2	1,137	10.8
Illinois	1,209	8.1	300	15.1	1,076	10.2
Ohio	1,020	6.9	430	21.6	826	7.8
Others	<u>1,024</u>	<u>6.9</u>	<u>501</u>	<u>25.2</u>	<u>943</u>	<u>9.0</u>
10-state total	14,885	100.0	1,989	100.0	10,529	100.0
<u>1964</u>						
Florida	9,425	42.6	43	1.8	6,426	40.3
California	4,789	21.6	176	7.5	2,311	14.5
Pennsylvania	2,027	9.2	426	18.1	1,755	11.0
New York	1,430	6.5	411	17.5	1,300	8.2
Ohio	1,143	5.2	363	15.4	1,054	6.6
Others	<u>3,313</u>	<u>15.0</u>	<u>933</u>	<u>39.7</u>	<u>3,092</u>	<u>19.4</u>
11-state total	22,127	100.0	2,352	100.0	15,941	100.0
<u>1970</u>						
Florida	11,829	36.5	48	2.0	8,706	32.7
California	9,956	30.7	246	10.5	6,601	24.8
Pennsylvania	2,301	7.1	259	11.0	1,910	7.2
New York	1,461	4.5	292	12.4	1,545	5.8
Ohio	1,210	3.7	248	10.6	1,451	5.4
Others	<u>5,674</u>	<u>17.5</u>	<u>1,256</u>	<u>53.5</u>	<u>6,438</u>	<u>24.2</u>
23-state total	32,431	100.0	2,349	100.0	26,651	100.0

Table 4-17. Continued

State	Bunches Sold		Producers		Wholesale Value	
	(1,000)	(%) <sup>a</sup>	(Number)	(%) <sup>a</sup>	(\$1,000)	(%) <sup>a</sup>
<u>1975</u>						
California	17,606	48.0	199	14.6	11,602	35.9
Florida	10,616	28.9	37	2.7	10,191	31.6
Pennsylvania	1,752	4.8	136	10.0	1,805	5.6
Ohio	875	2.4	181	13.3	1,295	4.0
North Carolina	788	2.2	21	1.5	906	2.8
Others	<u>5,068</u>	<u>13.8</u>	<u>792</u>	<u>58.0</u>	<u>6,495</u>	<u>20.1</u>
22-state total	36,705	100.0	1,366	100.0	32,294	100.0
<u>1980</u>						
California	24,422	70.2	178	18.5	23,201	61.7
Florida <sup>b</sup>	6,278	18.0	18	1.9	7,434	19.8
Pennsylvania	932	2.7	115	12.0	923	2.5
Ohio	639	1.8	115	12.0	1,214	3.2
New York	527	1.5	119	12.4	996	2.7
Others	<u>1,993</u>	<u>5.7</u>	<u>416</u>	<u>43.3</u>	<u>3,841</u>	<u>10.2</u>
Major state total	34,791	100.0	961	100.0	37,609	100.0

<sup>a</sup>Percentages may not add to 100.0 percent due to rounding.

<sup>b</sup>Includes small amount of standard chrysanthemums which were added here to avoid disclosure of individual operations in standard chrysanthemum data.

SOURCE: USDA, Crop Reporting Service [various years].

California growers (18.5 percent of the national total) who, in 1980, produced 70 percent of domestic production. Pennsylvania and Ohio regularly follow these two states but produce relatively insignificant amounts.

California dominates domestic rose production, and its relative influence on this crop is growing (Table 4-18). In 1980, California hybrid tea rose production was 177 million blooms; this accounted for over 56 percent of total domestic production. While total California production has not increased every year, California's portion of the total domestic production seems to have maintained a gradual and steady increase since 1973. California also dominates sweetheart or miniature rose production, producing about 50 million sweetheart roses or 44 percent of the reported 1980 domestic total. While California rose production has increased almost every year since production statistics have been provided, production statistics for other states do not show the same pattern of consistency. Pennsylvania, New York, Indiana and Colorado have each been represented several times, over the last decade, among the top five producing states of hybrid tea roses. Among top producers of miniature/sweetheart varieties, in recent years, have been Pennsylvania, which usually finishes second, Indiana, which has been third in recent years, and Massachusetts, Colorado, New York and/or Illinois.

Top gladiolus production honors do not go to California, however, but California is the second leading producer behind Florida. In 1980, Florida accounted for nearly 68 percent of the gladioli produced or over 112 million flower spikes (Table 4-19). California was a distant second with about 20 million spikes or 12.1 percent of total

Table 4-18. Top Five Producing States of Hybrid Tea and Miniature/  
Sweetheart Roses for Selected Years

State	Blooms Sold		Producers		Wholesale Value	
	(1,000)	(%) <sup>a</sup>	(Number)	(%) <sup>a</sup>	(\$1,000)	(%) <sup>a</sup>
<u>All Roses</u>			<u>1958</u>			
California	67,789	37.1	39	17.9	4,406	30.4
Illinois	44,506	24.4	43	19.7	3,560	24.6
New York	33,179	18.2	43	19.7	3,140	21.7
Ohio	12,040	6.6	34	15.6	1,023	7.1
Michigan	10,951	6.0	18	8.3	1,128	7.8
Others	<u>14,200</u>	<u>7.8</u>	<u>41</u>	<u>18.8</u>	<u>1,225</u>	<u>8.5</u>
10-state total	182,665	100.0	218	100.0	14,482	100.0
<u>All Roses</u>			<u>1964</u>			
California	86,603	31.6	43	16.7	6,627	26.2
Pennsylvania	45,993	16.8	39	15.1	4,661	18.4
Illinois	33,262	12.1	26	10.1	3,041	12.0
New York	30,513	11.1	32	12.4	3,165	12.5
Indiana	26,970	9.8	28	10.9	3,110	12.3
Others	<u>51,178</u>	<u>18.6</u>	<u>90</u>	<u>34.9</u>	<u>4,694</u>	<u>18.6</u>
11-state total	274,519	100.0	258	100.0	25,298	100.0
<u>Hybrid Tea Roses</u>			<u>1970</u>			
California	123,102	39.9	60	16.4	12,064	28.7
Pennsylvania	28,468	9.2	33	9.0	5,238	12.5
New York	18,923	6.1	31	8.5	3,353	8.0
Illinois	18,694	6.1	21	5.7	2,842	6.8
Indiana	18,369	6.0	20	5.5	3,655	8.7
Others	<u>101,157</u>	<u>32.8</u>	<u>202</u>	<u>55.0</u>	<u>14,878</u>	<u>35.4</u>
23-state total	308,713	100.0	367	100.0	42,030	100.0

Table 4-18. Continued

State	Blooms Sold		Producers		Wholesale Value	
	(1,000)	(%) <sup>a</sup>	(Number)	(%) <sup>a</sup>	(\$1,000)	(%) <sup>a</sup>
<u>Miniature/Sweetheart</u>						
<u>Roses</u>			<u>1970</u>			
California	33,597	25.8	48	16.9	2,049	17.1
Pennsylvania	13,528	10.4	30	10.6	1,610	13.4
Illinois	11,157	8.6	15	5.3	937	7.8
Indiana	9,763	7.5	13	4.6	1,064	8.9
New York	9,401	7.2	25	8.8	995	8.3
Others	52,706	40.5	153	53.9	5,362	44.6
23-state total	130,152	100.0	284	100.0	12,017	100.0
<u>Hybrid Tea Roses</u>			<u>1975</u>			
California	137,270	43.2	69	22.3	17,433	30.7
Pennsylvania	26,097	8.2	30	9.7	6,002	10.6
Colorado	21,971	6.9	17	5.5	3,559	6.3
Indiana	20,897	6.6	15	4.9	5,433	9.6
New York	18,851	5.9	18	5.8	4,143	7.3
Others	92,742	29.2	160	51.8	20,174	35.6
22-state total	317,828	100.0	309	100.0	56,744	100.0
<u>Miniature/Sweetheart</u>						
<u>Roses</u>			<u>1975</u>			
California	34,797	30.1	52	22.0	2,888	20.4
Pennsylvania	15,035	13.0	26	11.0	2,135	15.1
Massachusetts	9,114	7.9	9	3.8	1,066	7.5
Indiana	8,271	7.2	12	5.1	1,345	9.5
Illinois	6,917	6.0	9	3.8	706	5.0
Others	41,335	35.8	128	54.2	6,027	42.5
22-state total	115,469	100.0	236	100.0	14,167	100.0

Table 4-18. Continued

State	Blooms Sold		Producers		Wholesale Value	
	(1,000)	(%) <sup>a</sup>	(Number)	(%) <sup>a</sup>	(\$1,000)	(%) <sup>a</sup>
<u>Hybrid Tea Roses</u>			<u>1980</u>			
California	177,070	56.3	80	34.5	37,008	44.2
Colorado	22,598	7.2	14	6.0	5,288	6.3
Pennsylvania	17,942	5.7	19	8.2	9,025	10.8
New York	17,563	5.6	16	6.9	5,848	7.0
Indiana	16,712	5.3	15	6.5	8,071	9.6
Others	<u>62,808</u>	<u>20.0</u>	<u>88</u>	<u>37.9</u>	<u>18,491</u>	<u>22.1</u>
Major state totals	314,693	100.0	232	100.0	83,731	100.0
<u>Miniature/Sweetheart Roses</u>			<u>1980</u>			
California	50,017	44.2	67	36.6	6,852	31.2
Pennsylvania	11,665	10.3	19	10.4	3,534	16.1
Indiana	9,714	8.6	9	4.9	2,254	10.3
Massachusetts	8,889	7.9	9	4.9	1,644	7.5
Colorado	8,566	7.6	15	8.2	1,816	8.3
Others	<u>24,234</u>	<u>21.4</u>	<u>64</u>	<u>35.0</u>	<u>5,843</u>	<u>26.6</u>
Major state totals	113,085	100.0	183	100.0	21,943	100.0

<sup>a</sup>Percentages may not add to 100.0 percent due to rounding.

SOURCE: USDA, Crop Reporting Board [various years].

Table 4-19. Top Five Producing States of Gladioli for Selected Years

State	Spikes Sold		Producers		Wholesale Value	
	(1,000) <sup>a</sup>	(%) <sup>b</sup>	(Number)	(%) <sup>b</sup>	(\$1,000)	(%) <sup>b</sup>
<u>1958</u>						
Florida	155,868	73.1	57	9.2	7,664	75.8
California	25,968	12.2	61	9.8	1,212	12.0
Illinois	13,056	6.1	105	16.9	359	3.6
New York	7,248	3.4	129	20.8	357	3.5
Ohio	6,324	3.0	86	13.9	279	2.8
Others	<u>4,908</u>	<u>2.3</u>	<u>182</u>	<u>29.4</u>	<u>244</u>	<u>2.4</u>
10-state total	213,372	100.0	620	100.0	10,115	100.0
<u>1964</u>						
Florida	193,884	64.1	27	5.5	9,431	64.8
California	33,972	11.2	37	7.6	1,747	12.0
North Carolina	26,784	8.9	35	7.2	1,219	8.4
New Jersey	19,452	6.4	52	10.7	907	6.2
Illinois	13,128	4.3	61	12.5	458	3.2
Others	<u>15,048</u>	<u>5.0</u>	<u>275</u>	<u>56.5</u>	<u>786</u>	<u>5.4</u>
11-state total	302,268	100.0	487	100.0	14,548	100.0
<u>1970</u>						
Florida	166,248	59.3	23	6.3	11,277	60.2
California	37,248	13.3	22	6.0	3,111	16.6
North Carolina	25,116	9.0	19	5.2	1,331	7.1
New Jersey	24,840	8.9	36	9.8	1,250	6.7
Illinois	10,464	3.7	28	7.7	538	2.9
Others	<u>16,764</u>	<u>6.0</u>	<u>238</u>	<u>65.0</u>	<u>1,218</u>	<u>6.5</u>
23-state total	280,320	100.0	366	100.0	18,725	100.0



Table 4-19. Continued

State	Spikes Sold		Producers		Wholesale Value	
	(1,000) <sup>a</sup>	(%) <sup>b</sup>	(Number)	(%) <sup>b</sup>	(\$1,000)	(%) <sup>b</sup>
<u>1975</u>						
Florida	132,712	69.1	17	10.4	11,679	66.3
California	19,559	10.2	8	4.9	2,249	12.8
New Jersey	17,946	9.4	22	13.5	1,633	9.3
Illinois	8,397	4.4	15	9.2	663	3.8
Michigan	5,201	2.7	12	7.4	421	2.4
Others	<u>8,209</u>	<u>4.3</u>	<u>74</u>	<u>45.4</u>	<u>959</u>	<u>5.5</u>
22-state total	192,024	100.0	163	100.0	17,604	100.0
<u>1980</u>						
Florida	112,600	67.7	8	12.1	13,512	62.1
California	20,160	12.1	4	6.1	4,556	20.9
Illinois	11,126	6.7	14	21.2	1,035	4.8
New Jersey	11,090	6.7	17	25.8	1,131	5.2
Michigan	9,116	5.5	16	24.2	1,231	5.7
Others	<u>2,273</u>	<u>1.4</u>	<u>7</u>	<u>10.6</u>	<u>300</u>	<u>1.4</u>
Major state total	166,365	100.0	66	100.0	21,765	100.0

<sup>a</sup>Data originally reported as "1,000 dozens," were converted to "1,000"'s for easier comparison with later years.

<sup>b</sup>Percentages may not add to 100.0 percent due to rounding.

SOURCE: USDA, Crop Reporting Board [various years].

reported production. Illinois, New Jersey and Michigan have recently completed the list of the top five producers, although North Carolina, rather than Michigan, was more prominent earlier in the 1970s decade. Literally only a handful of commercial-sized gladiolus producers remain in each state. Total domestic production has slipped in recent years, although a smooth curve is hard to plot.

The outdoor and (relative to other floricultural crops) agronomic nature of gladiolus production presents growers with many production and marketing problems associated with the vagaries of the weather. This is especially true for Florida production, which is, for the most part, winter production (unlike gladiolus production in other states except California). As Florida production has such a dominant influence on national production data, an alternative to "spikes sold" might better gauge the decline in gladiolus production. (This is probably the only crop where one might not consider "spikes sold" a necessarily good proxy for production. Almost all gladiolus production is field production. Warm weather, especially when it follows unseasonably chilling temperatures, results in a flush of blossoms. When this occurs, many gladioli are left in the field and go uncut.) Hence, Table 4-20 presents production area, along with spikes sold, to perhaps better show the downward trends in production of gladioli over the last decade.

A lot less dominance has appeared in snapdragon production than for any other crop for which data exist. Several states, including New York, Pennsylvania, Ohio, Massachusetts, New Jersey, North Carolina and Florida, have been in the top five producing states more than once. There has been only one time when any state has accounted for as much as 15 percent of the domestic production (Table 4-21), yet up through 1979

Table 4-20. Comparison of Area of Production and Spikes Sold for Gladioli, 1970-1980

Year	Number of States in Survey	Acres of Production	Thousands Spikes Sold
1970	23	11,595	280,320
1971	23	10,761	284,664
1972	23	10,436	273,244
1973	23	11,964	234,768
1974	22	9,150	233,361
1975	Major producers	9,320	188,290
1976	Major producers	8,310	181,162
1977	Major producers	7,839	165,593
1978	Major producers	7,371	148,926
1979	Major producers	7,120	149,704
1980	Major producers	6,917	166,365

SOURCE: USDA, Crop Reporting Board [1971-1981].

Table 4-21. Top Five Producing States of Snapdragons for Selected Years

State	Stems Sold		Producers		Wholesale Value	
	(1,000)	(%)	(Number)	(%) <sup>a</sup>	(\$1,000)	(%) <sup>a</sup>
<u>1959</u>						
New York	6,976	13.8	350	10.9	601	13.2
Pennsylvania	5,314	10.5	365	11.3	463	10.2
Ohio	5,013	9.9	294	9.1	488	10.7
Massachusetts	3,905	7.7	192	6.0	353	7.7
New Jersey	3,556	7.0	168	5.2	270	5.9
Others	<u>25,730</u>	<u>51.0</u>	<u>1,856</u>	<u>57.5</u>	<u>2,387</u>	<u>52.3</u>
U.S. Total	50,497	100.0	3,226	100.0	4,562	100.0
<u>1969</u>						
Pennsylvania	2,644	12.2	166	15.0	410	12.8
Massachusetts	2,436	11.3	67	6.0	350	10.9
New York	2,127	9.8	123	11.1	343	10.7
Ohio	2,052	9.5	115	10.4	318	9.9
Maryland	1,625	7.5	29	2.6	194	6.1
Others	<u>10,744</u>	<u>49.7</u>	<u>608</u>	<u>54.9</u>	<u>1,591</u>	<u>49.6</u>
U.S. Total	21,628	100.0	1,108	100.0	3,206	100.0
<u>1976</u>						
Massachusetts	2,651	18.3	52	9.1	445	16.0
Pennsylvania	1,593	11.0	67	11.7	274	9.9
Florida	1,484	10.2	4	0.7	245	8.8
North Carolina	1,240	8.6	17	3.0	281	10.1
New York	1,129	7.8	63	11.0	269	9.7
Others	<u>6,392</u>	<u>44.1</u>	<u>371</u>	<u>64.6</u>	<u>1,268</u>	<u>45.6</u>
U.S. Total	14,489	100.0	574	100.0	2,782	100.0
<u>1980</u>						
Pennsylvania	1,267	12.4	61	11.8	302	11.3
California	1,021	10.0	9	1.8	175	6.6
Massachusetts	982	9.6	36	7.0	275	10.3
New Jersey	811	7.9	34	6.6	205	7.7
North Carolina	792	7.7	18	3.5	202	7.6
Others	<u>5,380</u>	<u>52.5</u>	<u>357</u>	<u>69.3</u>	<u>1,503</u>	<u>56.5</u>
U.S. Total	10,253	100.0	515	100.0	2,662	100.0

<sup>a</sup>Numbers may not add to 100 percent due to rounding.

SOURCES: Data for 1959 and 1969 are from U.S. Bureau of the Census, Census of Horticultural Specialties [1973]; data for 1976 and 1980 are from USDA, Crop Reporting Board [1977, 1981].

all of the top five producers each produced over one million stems. Attrition seems to be the general rule for producers, as the number of snapdragons produced has declined. There are, however, some exceptions. In 1980, for instance, only seven of the reported 18 states experienced a decline in number of snapdragon producers; in eight states the number of growers rose as compared with 1979. Production declined about 3.5 percent over the two-year period.

Other cut flower crop data are limited. The Censuses of Agriculture enumerate many additional species but the horticultural specialties are surveyed only about every 10 years, thus making statements about trends difficult. It is possible, however, to note that certain states are more involved in cut flower crop production than others. California definitely leads the nation in cut flower production. In 1959, California had nearly double the production of Florida. By 1978, the lead was over three times second-place Florida's total. Beyond these two states, the picture changed somewhat between 1959 and 1978. Although most of the same states were involved, their production rankings changed during this period. The 1978 Census of Agriculture's data for "cut flowers and cut florist greens" indicate that only Illinois has been displaced from the list of the top 10 producing states; Hawaii has replaced Illinois in this leadership capacity [U.S. Bureau of the Census, 1978 Census of Agriculture, 1982]. Illinois production placed it in eleventh place among the states (Table 4-22). Most of these states have concentrations of population, needed as both laborers and customers, as well as relatively good access to transportation facilities. Even before the construction of the Interstate Highway System, these states were homes to such famous

Table 4-22. Leading States in Wholesale Sales of Cut Flowers, 1959, 1970 and 1978

State	1959		1970		1978 <sup>a</sup>	
	Sales	State	Sales	State	Sales	State
	(\$ million)		(\$ million)		(\$ million)	
California	26.79	California	69.47	California	142.07	California
Florida	14.75	Florida	24.67	Florida	43.59	Florida
New York	11.70	Pennsylvania	16.15	Colorado	20.27	Colorado
Pennsylvania	11.41	Colorado	15.51	Pennsylvania	15.99	Pennsylvania
Illinois	8.99	New York	11.25	Ohio	14.12	Ohio
Colorado	6.72	Ohio	9.70	New York	13.08	New York
Massachusetts	6.49	Massachusetts	9.05	Hawaii	11.44	Hawaii
New Jersey	6.41	New Jersey	7.86	Indiana	9.92	Indiana
Ohio	6.31	Illinois	7.32	Massachusetts	7.78	Massachusetts
Indiana	5.24	Indiana	7.22	New Jersey	7.18	New Jersey

<sup>a</sup>1978 data are for cut flowers and cut florist greens.

SOURCE: U.S. Bureau of the Census, Census of Agriculture [various years].

trucking highways as U.S. 1 and U.S. 40. Today, each of these states is home to more than one interstate highway.

Another fact of import is that, in 1959, the top 10 states accounted for 74.8 percent of the total U.S. cut flower production (in wholesale dollars). California alone had over 19 percent of U.S. production. By 1970, the same (top 10) states were responsible for an even higher 77.5 percent of the domestic production; California represented 30.2 percent of total U.S. production. Both California's share and the share of the 10 leading producers rose in 1978 to 40.3 percent and 81.0 percent, respectively. These trends will likely continue.

#### International Production Patterns: Suppliers to the United States' Markets

International contributions definitely affect domestic supplies; as supplies affect prices and demand, these contributions surely affect the domestic industry. The fact that over 50 percent of the domestic supplies of both pompon chrysanthemums and carnations are imported (Tables 4-10 and 4-12) is not the only testament to this. Several petitions have been filed with the U.S. International Trade Commission by U.S. grower organizations alleging serious injury, caused by imports, to the domestic industry. The petitions have asked for some tariff or quota protection. Although these petitions have regularly been denied, domestic growers have continued pressing for relief as they have seen their numbers decline. As the decline continued, whether caused in part or in whole by imports, foreign supplies have become even more important to the U.S. cut flower supply.

The USDA's Market News Service reports U.S. imports of ornamentals based on inspections of the USDA Animal and Plant Health Inspection Service. The final 1980 report shows imports being received from 15 countries in amounts of consequence, plus some "others." Nineteen cut flower varieties, three cut foliage varieties and "other ornamentals" are reported [USDA, AMS, Ornamental Crops: National Market Trends, 1980].

Of cut flower varieties, carnations are imported in the greatest quantity. Over 383 million carnations were imported in 1980. Colombia is the largest carnation exporter to this country and is responsible for over 96 percent of carnations imported. Mexico is the only other carnation exporter of consequence (2.8 percent).

The second species of consequence is pompon chrysanthemums. Over 38.3 million bunches of pompon chrysanthemums were imported in 1980, with about six stems per bunch generally considered average. Again, Colombia accounted for about 96 percent of the flowers imported. No other country was responsible for as much as 1 percent of these imports.

Colombia, in 1980, also exported over 80 percent of the nearly 44.5 million roses imported into the U.S. Israel also tallied a sizeable portion, shipping almost 5 million roses (10.8 percent) to the U.S. in 1980, while the Netherlands accounted for over 3.5 percent of the imported roses in 1980. Roses also originated in Guatemala, Brazil, Mexico, Dominican Republic, Chile and others.

Daisies are also imported in sizeable numbers, and again Colombia is the largest source. About 70 percent of the 28.8 million daisies imported originated in Colombia. Nearly 12 percent of the imported daisies came from Mexico, and the Netherlands, Guatemala and Israel



accounted for about 4.9 percent, 1.8 percent and 1.7 percent of the daisies imported, respectively.

Imported standard chrysanthemums came largely from Colombia in 1980. Colombia was the source of 19.3 million (86.2 percent) of the 22.4 million stems imported. Guatemala, the Netherlands and Mexico accounted for about 8.4 percent, 3.9 percent and 1.0 percent of the stems imported, respectively.

Statice and gypsophila, two "filler" flowers, were also imported in sizeable amounts, and again Colombia played a dominant exporting role. Almost 34.3 million stems of statice were imported; Colombia contributed 90.8 percent of this quantity. Peru shipped 5.4 percent of the total, while Mexico (2.3 percent) also provided some of the domestic statice supply. Imports of gypsophila amounted to about 12.6 million stems, with Colombia, Israel, Mexico and Peru accounting for 83.8 percent, 9.4 percent, 5.2 percent and 1.2 percent of the total, respectively.

Several other cut flower species were imported in lesser quantities. Israel was the chief exporter of miniature carnations to the U.S., tallying 54.2 percent of the 5.6 million bunches imported. Colombia and Mexico were the source of 16.5 percent and 2.1 percent of the miniature carnations imported in 1980, respectively. The Netherlands was the leading exporter of lilies to the U.S. in 1980, with 3.8 million (70.1 percent) of the lilies originating there. Colombia was the only other lily exporter of consequence (27.7 percent of the total 5.5 million stems). The Netherlands also was the chief exporter of tulips to the U.S. in 1980, essentially providing all (99.4 percent) of the 3.4 million tulips imported. Freesia (2.1 of 2.2 million stems), iris (2.5 of 2.7 million stems) and lilac (0.22 of 0.26 million stems)

were also largely imported from the Netherlands. Orchids came from many countries in 1980 including Thailand, the Netherlands, Singapore and others according to the Market News Service Reports. Gladioli (0.825 million) were imported from Mexico (0.13 million) and others. Mexico (8,000) and others (3,000) were also responsible for exporting 11,000 cornflowers to the U.S. in 1980.

Several countries also exported cut foliage to the U.S. in 1980. Mexico and Guatemala have for years been the sources of the large amounts of Chamaedorea imported. In 1980, Mexico shipped 287.4 million stems to the U.S., while Guatemala contributed 107.5 million stems. In total, about 399.5 million stems of Chamaedorea were imported in 1980. Guatemala also accounted for 264,000 stems of leatherleaf fern imported in 1980, while other countries contributed another 296,000 stems to the domestic supply. The Market News Service also reports that about 18.3 million stems, 0.5 million stems, 9,000 stems, and 4.7 million stems of other miscellaneous ferns were imported in 1980 from Guatemala, Mexico, Israel and others, respectively.

Finally, the Market News Service reports "other ornamentals" were imported in 1980. Almost 11 million stems came from countries such as Colombia (52.3 percent of this total), the Netherlands (23.9 percent), Mexico (11.9 percent), Israel (9.5 percent), Guatemala (0.6 percent), Jamaica (0.3 percent), South Africa (0.3 percent) and "others."

Obviously, imports are important to the U.S. supply of cut flowers. Colombia, which accounted for 89.14 percent of the total number of units (of cut flowers only, i.e., excluding the cut foliage) imported in 1980, is especially important. Other dominant countries would include

the Netherlands (3.20 percent of the units), Mexico (3.04 percent), Israel (1.81 percent), Guatemala (0.54 percent) and Peru (0.50 percent).

The changes, over time, in imports have been dramatic, to say the least. Table 4-9 showed the growth in imports of major cut flower species over the last 10 years. As these imports have been of significant consequence to the domestic supply, they have not gone unnoticed by the domestic production industry. As a matter of fact, the domestic production industry has suffered, partly due to imports [Burket, 1977], and has petitioned the U.S. International Trade Commission several times regarding possible import relief. The commission has not found the injury to be "serious injury" and could not lay the blame for industry ills solely on imports, however.

Nevertheless, there has been a change in the growth pattern of flower imports. Between 1976 and 1977, there was a growth in imports of 39.5 percent. (The first trade commission hearings were in 1977.) Growth slowed to a rate of 27.3 percent between 1977 and 1978 and a 14.7 percent rate between 1978 and 1979. Finally, between 1979 and 1980, growth in imports seemed to be stabilizing somewhat, as it was only 14.3 percent.

Although some may attribute this pattern of increasing imports at a decreasing rate to a maturation process of the young foreign cut flower industries, closer examination of the countries of origin of cut flowers (Table 4-23) show that such is not necessarily the case. Colombia has accounted for a slightly decreasing share of domestic imports over the past several years, even though U.S. imports from that country continue to rise. At the same time, the Netherlands has claimed a rapidly increasing share of U.S. cut flower imports. The same trend is

Table 4-23. Total U.S. Cut Flower Imports and Major Countries of Their Origin, 1977-1980

	1980	1979	1978	1977
	----- (1,000) -----			
Total flower units <sup>a</sup> imported	597,975	523,285	456,307	358,522
<u>Exporting Country:</u>				
Colombia				
flower units <sup>a</sup>	533,009	468,914	419,930	327,949
percentage of total	89.1	89.6	92.3	91.5
Netherlands				
flower units <sup>a</sup>	19,148	5,827	4,714	3,447
percentage of total	3.2	1.1	1.0	1.0
Mexico				
flower units <sup>a</sup>	18,160	19,542	11,345	13,355
percentage of total	3.0	3.7	2.5	3.7
Israel				
flower units <sup>a</sup>	10,835	19,940	2,262	2,433
percentage of total	1.8	3.8	0.5	0.7
Guatemala				
flower units <sup>a</sup>	3,354	5,669	7,808	9,022
percentage	0.6	1.1	1.7	2.5
Peru				
flower units <sup>a</sup>	3,005	n.a.	n.a.	n.a.
percentage of total	0.5	n.a.	n.a.	n.a.

<sup>a</sup>A flower unit, as used here, is stem, bunch or flower, however it is reported. One exception is that pompon chrysanthemums, which were earlier reported in stems, were converted to bunches for 1977 and 1978, to coincide with later reporting techniques. Cut foliage, e.g., leatherleaf, Chamaedorea or miscellaneous ferns are not included in totals.

SOURCE: Adapted from USDA, AMS, Ornamental Crops: National Market Trends [1978-1981].

apparently continuing for the first six months of 1981, as compared to the similar period of 1980 (Table 4-24). Yet, the industry in Colombia is thriving, and the Dutch flower industry is anything but a fledgling.

What has occurred is that the flower market in the United States has, so to speak, become a part of the world flower market. Improved transportation and related services now can result in flowers arriving in some parts of the U.S. sooner, if they leave from Holland or South America, than they would if they had originated in California, for instance. Improved transportation can put flowers within a day's reach, which is helpful with market channel members watching their inventories more closely than ever before. Improved post-harvest handling and care only add to the possibilities for foreign suppliers.

Furthermore, "joining" the world market, as it were, changes shipping patterns from originating countries. If prices are relatively higher in Europe, for instance, South American and Israeli producers, would more likely ship to Europe. If relative prices are highest in the U.S., Europeans, Israelis, and South Americans all probably would divert product to the United States. Both of these are realistic possibilities, too, as Israel and Colombia have both become frequent contributors to European supply in the last few years.

Naturally, world economic health and the health of various countries' economies play large roles in determining trade flows. Exchange rates provide a "common language." Other factors, such as quotas and tariffs, are also a determining factor in this trade process. Government actions, such as transportation subsidies or the annual spring and summer flower "embargoes" of the European Economic Community, also help to determine direction of trade. The U.S. experiences an

Table 4-24. Total U.S. Cut Flower Imports and Major Countries of Their Origin for the First Six Months of 1981 as Compared with the Same Period of 1980

	Six months, 1981 <sup>a</sup>	Six Months, 1980 <sup>a</sup>
	----- (1,000) -----	
Total flower units <sup>b</sup> imported	416,015	325,088
<u>Exporting Country:</u>		
Colombia flower units <sup>b</sup> percentage of total	354,214 85.1	283,489 87.2
Netherlands flower units <sup>b</sup> percentage of total	21,341 5.1	9,948 3.1
Mexico flower units <sup>b</sup> percentage of total	20,274 4.9	12,486 3.8
Israel flower units <sup>b</sup> percentage of total	7,991 1.9	7,273 2.2
Guatemala flower units <sup>b</sup> percentage of total	1,745 0.4	1,955 0.6
Peru flower units <sup>b</sup> percentage of total	1,434 0.3	286 0.1

<sup>a</sup>For the period through July 4 of each year.

<sup>b</sup>A flower unit, as used here, is stem, bunch or flower, however it is reported. Cut foliage, i.e., leatherleaf, Chamaedorea or miscellaneous ferns are not included in totals.

SOURCE: Adapted from USDA, AMS, Ornamental Crops: National Market Trends [1982].

influx of product from South America and Israel each spring as the European Economic Community flower import restrictions take effect about May 9 [Besemer, 1979]

When speaking of world economic health and the health of other countries' economies, one, of course, considers consumer price indices, buying habits, etc. These influence demand in a country. Subsequently, these influence prices and quantities of merchandise diverted to or from various countries. Much of Europe has a high historical per capita consumption pattern for cut flowers. Most notable are West Germany and Holland, where flowers are used truly on an everyday basis [Mulder, 1981]. Many hope that Floraboard (to be discussed in Chapter VII) will be the force that finally "Europeanizes" America. If this indeed occurs, many suggest that the U.S. market will need all of the supply, foreign and domestic, that it can get to satisfy demands [Nicholas, 1980b]. However, in the short run, during a world recession, some European countries, with their already higher per capita consumptions, may make for better sales opportunities than the U.S. market.

#### Shifts in Production: Cut Flower Production Alternatives

Another major influence affecting domestic sources of cut flower supply in the United States is the opportunity cost of remaining in cut flower production; it is forever increasing. In many parts of the country's top production areas, i.e., California and Florida, real estate is a very attractive alternative option. It is not hard to find flower fields or former flower fields now shadowed by high-rise condominiums or other signs of urban sprawl. Lack of heirs who want to enter the flower business, labor problems or zoning quarrels convince many

operators that such alternatives are indeed correct options to choose. Energy costs and foreign or domestic competition spur the decline in numbers.

Many growers have found it more profitable to produce potted blooming or foliage plants and/or bedding plants, instead of cut flowers. In Florida, it is hard to find any cut flower grower who does not have at least some alternative to cut flowers, whether it be foliage production or citrus or cattle production. Several growers raise vegetables or are contemplating moving into some similar form of alternative agriculture.

These cut flower production alternatives naturally affect the geographic distribution and shifts in production in the industry. Perhaps a more subtle, but nonetheless important, series of shifts is that occurring among growers who are varying the cut flower crops that they produce. Some of these shifts seem energy related, as many growers have switched to crops requiring cooler temperatures, e.g., from roses to carnations. Others have taken an opposite approach, moving to higher valued crops, such as to roses, so as better to afford fuel costs. Market orientations have caused many growers to vary their product mix to offer more species to customers; the hope is that wider selections will help to maintain a market niche by attracting new customers, while keeping established accounts. Finally, some shifts in production are production oriented. Growers with limited labor supplies have switched, for example, to miniature/spray carnations or pompon chrysanthemums in an effort to stretch available labor supplies. Time-consuming disbudding is reduced when growing miniature/spray carnations instead of standard carnations, or when growing pompon chrysanthemums instead of standard chrysanthemums. Gladiolus growers who have limited their



acreage are, in many cases, doing so because of labor constraints; in some cases, statice or gypsophila are providing cut flower production alternatives to these outdoor growers.

### Status of International Trade and World Markets

#### Trends

The final 1980 issue of the USDA Market News Service's weekly market report, Ornamental Crops: National Market Trends, listed 15 different countries that exported cut flowers and other ornamentals to the U.S. in 1980. Countries of less consequence are listed as "others." Of the total number of units (in either blooms, stems or bunches) imported in 1980 (excluding Chamaedorea, leatherleaf and miscellaneous ferns, for which Mexico and Guatemala are chiefly responsible), Colombia accounted for about 89.1 percent of the flowers imported. Other countries of importance for U.S. cut flower supplies in 1980 were the Netherlands (3.2 percent), Mexico (3.0 percent), Israel (1.8 percent), Guatemala (0.6 percent) and Peru (0.5 percent of cut flowers imported). The report indicates that total cut flowers imported increased 14.3 percent in 1980 over 1979 figures. For the first six months of 1981 it appeared that, in percentage share of imports, Colombia, Israel and Guatemala are decreasing in importance, while the Netherlands, Mexico and Peru are increasing in importance. Nevertheless, all countries, except Guatemala, were exporting more products to the U.S. [USDA, AMS, Ornamental Crops: National Market Trends, 1980]. Tables 4-23 and 4-24 showed how these countries have changed in importance over the last several years.

Yet, there is more to the question of international trade that affects the domestic industry than just the amounts imported from various countries. The countries exporting flowers to the U.S. have alternative destinations to which they may and do ship. As part of the world cut flower market, the U.S. may be easily affected by other world trade.

The International Association of Horticultural Producers 1980 edition of European Horticultural Statistics: Non-Edible Horticultural Products indicates that 376 million Swiss francs worth of fresh cut flowers were imported into Europe from non-European countries in 1979. Israel was by far the largest exporter to Europe [Gerstenberger and Siegmund, 1980]. In 1978-79, Israel raised 3,500 acres of floral crops, 2,300 acres of which were greenhouse grown. Israel exported over \$75 million worth of cut flowers in 1978-79, an increase of over 200 percent over the \$18 million exported in 1975-76. Most of this product goes to Europe [Besemer, 1979]. Colombia, Thailand, Kenya, South Africa, Singapore, the United States and Brazil also exported significant amounts to Europe. Other non-European countries contributing to European cut flower supplies were the Ivory Coast, Australia, Malaysia, Jamaica, Morocco, New Zealand, Mauritius and Egypt [Gerstenberger and Siegmund, 1980].

The Netherlands is by far the largest European exporter to other parts of Europe. Holland, in 1979, had over 17,500 acres of glass-houses, approximately 50 percent of which were producing ornamentals. Dutch sales of cut flowers for export in 1979 amounted to 1,079.3 million Swiss francs. Nearly 90 percent of this total remained within the European Economic Community (EEC). In 1978, West Germany alone

accounted for 84 percent of the 968.9 million Swiss francs of Dutch cut flower exports [Besemer, 1979; Gerstenberger and Siegmund, 1980].

The Netherlands is followed by Italy, France and Spain as top intra-European cut flower exporters. West Germany imports more cut flowers than any other European country. France, Belgium, Luxembourg, Switzerland, Austria, Sweden and Great Britain also appear to be recipients of much of the intra-European cut flower trade. Finally, West Germany, the Netherlands, Great Britain, Switzerland, Sweden, Austria and Italy were the largest 1979 European importers of cut flowers from non-European sources [Gerstenberger and Siegmund, 1980].

Other cut flower exporting countries outside of Europe include Australia, New Zealand, Singapore and Thailand; these have often exported orchids. South Africa, Kenya, the Ivory Coast and Egypt have exported both traditional major species (carnations, roses, chrysanthemums, etc.) and tropical cut flower and foliage species; destinations include Europe, the U.S. and elsewhere [Storck and Hormann, 1976; USDA, AMS, Ornamental Crops: National Market Trends, various years].

As it is obvious that many of the European countries offer alternative markets for cut flower producers, and that many of those supplying the U.S. now also regularly take advantage of these opportunities, it is imperative that the factors involved in determining export destinations be considered. Obviously market price is the most important factor. Market price is determined by the intersection of supply and demand. Data for 1977 indicate that West Germany, France, Switzerland, Sweden, Austria, Great Britain, Norway and Finland were European countries with production deficits (i.e., demand exceeded local supply). Belgium is expected to join these ranks by 1987.

European countries raising more than they consume in 1977 were Italy, Holland, Belgium, Denmark and collectively Spain, Greece and Portugal [Mulder, 1981]. Excess demand can serve to raise prices, while excess supply can serve to lower prices, each relative to what could happen in an equilibrium situation.

Relative market price is also important; it is influenced by the health of the economies of various countries and by the balance of trade between trading partners. Contracting economies offer lessened opportunities for sales inroads, while expansionary cycles in an economy may offer broader sales opportunities, perhaps accompanied by rampant inflation. Countries experiencing trade surpluses may have their product derided, restricted or even embargoed by trading partners experiencing trade deficits. Deficit ridden countries, on the other hand, will eventually achieve a price level that is relatively lower than that of their trading partners experiencing trade surpluses. Then the pendulum swings and the reverse positions will eventually be held by the trading partners.

Beyond the question of absolute or even relative market prices between countries is the issue of price stability. The U.S. cut flower market price patterns, as will be demonstrated in Chapter V, are made up of many peaks and valleys. Such variation obviously discourages exporters from shipping products to the U.S., if alternative destinations provide more stable price patterns.

The often mentioned everyday use of flowers that takes place in some European countries obviously leads to greater price stability. Hence, product is attracted from many countries. Mulder [1981] suggested that, in 1980, Holland, with 55 per capita consumption,

experienced almost three times the per person demand as was experienced in the U.S. (\$20 per capita consumption). Similarly, per capita consumption in Belgium (\$51), West Germany (\$50), Sweden (\$45) and France (\$33) all exceeded that of the U.S. in 1980. Colombia, the Netherlands and Israel are three countries that recognize the advantages of European markets as they now regularly send a lot of product to Europe (as well as to the United States).

One indication of the problem of fluctuating market demand was observed by this author when visiting Miami, Florida, importers during a period just following Valentine's Day, 1981. Importers and shippers were facing very depressed times and were generally of the opinion that, within the next few years, foreign growers would begin competing for market share among themselves, rather than continuing to experience the almost unlimited access to U.S. markets they currently were enjoying. Shippers claimed that the depressions that come with seasonal price fluctuations, i.e., usually following major holidays, were going to be the delimitative factors in the marketplace, unless great advances were made in spurring demand.

Again, markets may be totally closed due to quotas, tariffs or other restrictions which will eliminate marketing opportunities, even if demand exists. The annual May embargo on cut flowers by the European Economic Community, issued to protect growers of member countries, essentially does just this, until it is lifted each winter.

Another factor that plays a role in determining product destination is transportation. Not only is distance a factor, but available means can also be quite important. Colombia, for instance, has tremendous advantages because it is closer to the East Coast cities of the U.S.

than is California. Other flower producers may occasionally benefit, as their product is among the exports from their country that are sought to fill the often empty cargo spaces found on departing planes. This frequently happens when trade imbalances occur between two countries or regions of the world. Planes may arrive filled with imports and depart virtually empty. (This question of backhaul is also a determinant in the U.S. for trucking of cut flowers.)

Such factors will probably continue to influence trading patterns for cut flowers around the world.

#### International Development of the Cut Flower Industry

Many of the flowers entering the U.S. originate in countries that had only minimal cut flower industries slightly more than a decade ago. Many factors have influenced the growth and the development of comparative advantages that have occurred in some countries, thus enabling them to compete successfully in foreign markets. Climate and related energy efficiencies, labor supplies and costs, transportation distances and supply, tax policies and many other productivity advantages all play a role in this development. While there are not data for all countries, the literature provides some information as to how these factors will continue influencing the development of the foreign industries.

Cecil N. Smith, in his 1972 paper, "Latin American Competition in the Cut Flower Market," suggested that climate, a readily available supply of relatively cheap labor, the availability of air cargo space between producing areas and U.S. markets, expanding local markets in Latin American countries and the tax advantages relating to depreciation and investments which exist in certain countries have all contributed to

the development of various Latin American flower industries. Smith [1972] also cites less skilled labor, high costs of supplies of specialized production inputs, problems with shipping, customs, laws and regulations, insect and disease problems and anti-import sentiments from local producers as disadvantages that many Latin American producers have faced.

Rout [1982], in an article in the Wall Street Journal, adds that language barriers can be a big problem. Domestic companies often have trouble hiring enough people with the language abilities needed to do proper market research or evaluate the risks. He also suggests that exporting product to some countries can cause enough problems, due to laws and import restrictions, to make setting up a subsidiary in such a country a practical alternative. This is in spite of the cultural differences and the added costs for establishing such a subsidiary. Rout cited the case of Mexico, where new oil wealth had caught the eyes of many companies. Yet, Mexico's import labyrinth had warranted the establishment of Mexican subsidiaries for many of these interested companies. He also discussed Mexico's investment laws, which required a majority interest in any such company to be under Mexican ownership; this seemed to discourage many foreign investors [Rout, 1982].

Some recent publications indicate a change has occurred in some factors. Climate, of course, has not changed, and may still be the biggest advantage of some of the Latin American countries. This has become an even greater advantage due to the energy embargoes of the mid- and late-1970s which have resulted in higher fuel prices.

Labor costs, on the other hand, may not be considered as great an advantage as previously. The labor in some countries is basically unskilled, and the true effect of such is just now being realized. Pay for

native labor is no longer cheap. Smith [1972] reported that labor was being paid \$0.90 to \$1.50 a day. Today, however, wages in Colombia, for instance, have risen to \$6.00 daily. The list of fringe benefits, which include supplied lunches, insurance, retirement, 15 paid holidays per year, work clothes, transportation, education for workers' children and paid funeral expenses for family members, makes the \$6.00 daily wage rate seem small [Howard, 1981]. Labor supply, however, must still be considered an attribute provided by many of the developing countries.

The transportation system has improved tremendously, easing the importers' problems. Today, a flower can be cut in Colombia, for example, and be in Miami, Florida, within 24 to 36 hours. In a matter of hours, the same flower can be loaded on a plane to arrive at its end destination a short time later. Hence, the flower can be marketed within two days of being cut. If trucking is used for interstate shipment, the same flower can be at its final destination within two to four days of landing in Miami. Today, firms have been formed to handle flowers as they arrive and clear them through customs and plant quarantine inspections. Divisions of several domestic trucking firms specialize in flower handling. Several airlines have representatives specializing in the handling and scheduling of cut flowers.

Perhaps the most impressive factor that has contributed to, and promises to further aid the development of the foreign producer is the marketing networks that have been established by either independents or cooperative ventures to handle the disbursement of product. The Dutch, through several firms, the Israelis, through Agrexco, U.S.A., Ltd., and the Latin Americans, through many independent importers or cooperative grower-shipper ventures, have all established sophisticated networks to



market their flowers in the United States. While there are large U.S. firms with similar organizational structures, the independent domestic operator, who is not so affiliated, can be at a distinct competitive disadvantage compared with most of the larger importing firms.

Tax advantages and other subsidies, which various governments have provided both their domestic growers and foreign investors, continue to be tremendous developmental tools [Besemer, 1979; Johnson, 1981]. Often the aim of such government programs is to provide meaningful jobs. Yet, motives of attracting foreign investments, furthering the development of a region, sector or country, establishing a recurring source for foreign currencies, development of trading partners and broadening a local tax base are also realistic. Even the fact that such taxes, laws and regulations compare favorably with those found in other countries, e.g., the U.S., furthers industry development in a country.

A final area which greatly influences the development of an industry has been the area of productivity. Questions relating to equipment, management, cultivars and other technology related issues can affect development, competitiveness and progress of an industry. Labor's ability to operate in a high technology environment also affects productivity in this regard.

Many Latin American countries and others in temperate climates have the luxury of being able to avoid building expensive structures for cut flower production. In many cases, structures are only built to provide cover for blossoms, preventing rain damage or sun scorching. Contrary to this environment is that of a country such as the Netherlands, which not only needs structures for temperature protection, but which must rely almost solely on expensive high light transmitting structures made

of glass. Here, the greenhouse structure technology is very developed. Plants can be started out-of-doors during warm weather and then greenhouses, even if made of glass and steel, can be moved over the plant beds as winter approaches and protection is needed.

Other equipment considerations run the gamut from shovels to front-end loaders, from the use of sunlight to the use of high-intensity-discharge (HID) sodium vapor lamps for supplemental lighting, from smudge pots (in open fields) for use on cold nights to the use of thermal blankets to avoid the expense of heating the upper portions of a greenhouse. The extremes of this range often coincide with countries that are either labor intensive or, alternatively, capital intensive in their floriculture industries. Most Latin American countries could be considered to enjoy comparative advantages at the labor intensive extreme, while the Netherlands must be considered among the relatively more capital intensive countries. This range can also be seen to vary with the crop. Crops such as standard carnations and pompon and standard chrysanthemums, where much labor is needed for disbudding, are predominantly raised in relatively labor intensive countries. Crops such as roses tend to hail from capital intensive environs.

As previously mentioned, importers tend to have advanced marketing structures relative to many domestic organizations. This is a tribute to their management skills. Unlike the vast majority of domestic growers, foreign exporters are highly business management oriented; employing business school graduates is not unheard of [Howard, 1981]. Domestic firms traditionally are horticulturally oriented and tend to stress cultural expertise rather than business acumen. The management orientation has definitely been an asset to developing industries.

Producers in many countries often experienced initial difficulties obtaining appropriate plant materials for crop production. Varieties used in the U.S. are not always adaptable to foreign environments, either due to cultural or climatic conditions. In many cases, it took the patience of U.S. advisors or sales personnel to find appropriate strains for foreign producers. Today, however, the industries in many other countries are well advanced culturally, and local crop researchers often care for local needs. The domestically grown cultivars in other countries are not always consistent with U.S. varieties, but the produce has been accepted in the marketplace with few or no problems. Hence, cultivar adaptation no longer seems a real problem for foreign producers.

On a broader scale, however, is the question of the species raised. For the most part, U.S. producers maintain their production in a very limited number of species. Yet, if one were to visit U.S. flower markets, many unusual varieties are found, many originating in countries as distant as Holland, Kenya, New Zealand or the Philippines. One certainly becomes aware of the broad range of species not widely produced in the U.S. for which a niche definitely exists.

Floriculture technology is ever changing. However, unlike the advanced technology that the U.S. displays in other industries, the floriculture technology in the U.S. is said to have fallen behind that of both Holland and Israel [Besemer, 1979]. Government supported programs and/or strong grower groups, as they appear in other countries, have been credited with the successes enjoyed in Holland and Israel. Yet, one is forced to recognize that adversities of climate, competition or even economic considerations may have influenced the technological advancements as well.

On the other hand, some Latin American countries are considered to be technologically deficient. Relatively inexpensive labor, however, must be considered the explanation here. One need not invest in research and development if current economic conditions afford the opportunities to do otherwise. Increased labor costs or other economic pressures of the future are bound to correct these deficiencies if market shares continue to warrant further investments.

Finally, it may be well to cite André J. Mulder, Managing Director of the Aalsmeer, Holland, flower auction; he suggested that the most important elements for assuring success in the flower business in the 1980s are (1) a good distribution network, (2) skilled labor, (3) product innovation, (4) products of high quality, (5) traditional and mass market sales and (6) year-round consumer promotion programs [Mulder, 1981]. If Mr. Mulder is correct, then the cut flower industries in many countries, including the U.S., need to modify current practices or risk being unsuccessful.

#### Summary

This chapter has focused on national production and import trends. Geographic changes in the U.S. industry, both from a domestic and an international supply perspective were analyzed for the major species and the industry in general. Incentives for altering production patterns were examined. Finally, the chapter ended by focusing on the status of international trade and world markets.

Next, Chapter V will focus on the consumption of derived products. Characteristics of consumption will be examined, and an investigation into price elasticities and flexibilities of demand and commodity price patterns will be conducted.

## CHAPTER V CONSUMPTION OF DERIVED PRODUCTS, ELASTICITIES OF DEMAND AND COMMODITY PRICE PATTERNS

This chapter will examine the characteristics of the consumption of cut flowers. The chapter will initially study the consumption of derived products; this will include a look at cut flowers and flower arrangements, retail market outlets, alternative uses for the product, population demographics affecting consumption and substitutes for fresh cut flowers. The chapter will continue with a study of the elasticities and flexibilities of demand and will conclude with an investigation into commodity price patterns. The latter will include an examination into marketing margins throughout the distribution system.

### Consumption of Derived Products

#### The Products

When talking of the derived products of cut flowers, one immediately is confronted with the cut flower arrangement, the chief product of flower shops. Related flower forms such as boxed, wrapped or vased flowers are also popular; in many cases, these are not even distinguished in price from arranged flower designs (where a floral foam, wires and/or tapes, etc., are used to secure flowers in an artistic array). Other product forms also exist, such as boutonnieres, corsages or nosegays, etc., or the currently popular hand-held bunch of flowers or mixed bouquets. The hand-held bunch of flowers, quite common in

Europe, seems to be making its greatest inroads in this country via the mass market. In addition, it is possible to buy single flowers, although not at all locations. Some florists discourage sales of single flowers, maintaining that it is too time consuming for the amount of the sale.

Still other uses of cut flowers exist. Dried flowers start as fresh cut flowers. Parades, such as the annual Tournament of Roses Parade on New Year's Day in Pasadena, California, make extensive use of cut flowers and flower parts. There are also several relatively minor uses which might include use in perfumes, scented stationery or papers, sachets or the like.

#### Market Outlets

Flower arrangements, at least historically, have been the biggest use of cut flowers. Although individuals, garden clubs and, now, even supermarkets make cut flower arrangements, the largest segment of cut flower users is still that of the traditional retail florists [The Floral Index, Inc., 1979, 1980]. Flower arrangements have historically been the basis of the retail florist industry.

The Floral Index, Inc., estimates that there are 29,000 small flower shops in the U.S. [Joseph, 1981]. The Floral Report, a monthly publication of The Floral Index, Inc. [August 1979], reported that cut flowers accounted for 73.5 percent, 71.3 percent and 71.6 percent of florists' sales for January, February and March, 1979, respectively. Furthermore, it is estimated that retail florists accounted for about 90 percent of all retail cut flower sales in 1979 [The Floral Index, 1979]. At the same time, it should be noted that for the six-month period of

November 1979 to April 1980, retail florists' share of all floral items (this includes cut flowers, blooming plants, green plants, plant food, soil, plant care items, containers and other floral items) was only about 62 percent [The Floral Index, Inc., 1980].

The second major group of cut flower market outlets is the mass market. Mass marketers, which include supermarkets, discount and department stores, accounted for a monthly average of approximately 18.8 percent of all floricultural item sales from November 1979 to April 1980 [The Floral Index, 1980]. Some estimates suggest that mass marketers may account for as much as 50 percent of all floricultural units sold (e.g., Kress [1976a]). Yet, supermarkets, discount stores and department stores each only claimed approximately 16.6 percent, 4.2 percent and 4.8 percent of cut flower sales for the period of December 1979 to February 1980, respectively [The Floral Index, Inc., 1980].

When one considers that the term mass marketing hails from marketing product to the masses rather than marketing mass quantities of merchandise (the latter being a result of the need to satisfy the demand of the former), it is, perhaps, quite arguable that the term mass marketer should include aggressive florists who have moved their shop locations to the masses. Those shops that have located in or near malls or shopping centers, hence, might be included among mass marketers, in a somewhat less than traditional sense. If this definition were to apply, then the mass marketer's share of the cut flower industry would be much higher. On a similar vein, some mass marketers have established what are essentially traditional shops, complete with all the amenities and services, in their mass market locations. The line separating mass marketers from traditional retailers is indeed vanishing.

Nurseries also can be found occasionally carrying cut flowers.

The Floral Report estimates that 12.4 percent of nursery sales in May 1980 were cut flowers (probably a higher than average percentage due to Mother's Day). The report also suggests that nurseries were responsible for a 14.4 percent share of all floral items and a 3.6 percent share of cut flowers sold in May 1980 [The Floral Index, Inc., 1980].

Certainly a group that should be included among mass marketers in this less traditional sense would include street vendors and others that locate in high-traffic areas (airports, drugstores, etc.). FTD [1982c] reports that members operated full- or partial-service outlets in hotels, military bases, airport terminals, hospitals, street corners, shopping mall kiosks, office buildings, drugstores and others in 1980. These other outlets, which the Floral Report credits with approximately 7.9 percent of all U.S. floral item sales for the period November 1979 to April 1980 [The Floral Index, 1980], are quite significant in many areas. Weekend and holiday sales are popular among street corner vendors.

Finally, one other kind of outlet which may be responsible for some consumer sales are sales at growing outlets or sales by wholesalers. The USDA's annual Floriculture Crops reports always list the percentage of sales (made) at wholesale by the growers surveyed. While the largest producing states typically report that 99 to 100 percent of sales were made at wholesale (except for bedding plants), many of the secondary producing states often report much lower percentages of sales made at wholesale.

Wholesalers, too, have occasionally made sales to the public. Controversies have developed among wholesalers and retailers when the



former have sold merchandise to people without checking for retail business licenses. At some of the terminal markets, retailers are required to show or wear badges before wholesalers can make sales. At other terminal markets, some wholesalers advertise that they will sell to anyone. Threats of retaliatory boycotts by retailers often go ignored, although this has not always been the case.

#### Consumption: Alternative Uses of Derived Products and Rates of Growth

As the quote from Eleanor Roosevelt's letter (at the start of Chapter III indicated, "Flowers add to our joys and comfort us in our sorrows . . . " [Williams, 1960, p. 280]. But, there are more to flowers than the words joy and sorrows would indicate, for flowers are given for many reasons, and occasionally, for no reason at all. A 1977 FTD Flower Business Fact Book lists funerals and memorials, holidays, illnesses and maternities, birthdays and anniversaries, weddings and business gifts as the occasions which account for "total retail operations." In 1967, Havis reported on his 1964-65 survey of over 2,500 retail florists. Although not directly comparable to other data (because of categories used), Havis [1967] attributed total sales to funerals/memorials (46 percent), hospitals (19 percent), weddings (9 percent), conventions and business openings (4 percent), church use (5 percent), home use (10 percent) and other (7 percent). The neglect to even note a holiday sales category in 1964-65 perhaps underlines the tremendous changes that have occurred in flower shop sales over time.

Further analysis of available data is warranted here. Although the breakdown of uses by occasion in the FTD Fact Books totaled 106 percent

in 1970, 103 percent in 1975 and 102 percent in 1980 (because median sales percentages were used), the data still provide the desired clues to trends in business operations. Funerals accounted for the largest portion of florists' business according to the fact books. Compiling figures from member shops, the 1977 fact book indicated that, in 1970, a median 42 percent of total retail operations were for funerals and memorials. This figure had dropped to 37 percent of operations by 1975. Furthermore, the 1977 fact book indicated that, in 1975, the non-metropolitan area shops in the survey relied more heavily on funerals and memorials than did metropolitan area shops. Moreover, single unit shops in all areas counted on funerals and memorials for a larger share of their business than did multi-unit businesses [FTD, 1977].

Recent indications are that even further drops in funeral and memorial business have occurred. In a 1980 article in Flower News, Edd Buckley estimated that sympathy orders (which may or may not include memorials as used in the FTD Fact Books) accounted for approximately 25.4 percent of customer sales in 1977. This figure dropped to 24.9 percent in 1978. Furthermore, Buckley [1980] reported that, between 1977 and 1978, the number of funeral units purchased fell about 5 percent. Herb Mitchell estimated that funeral and memorial business accounted for 33 percent of retail florists' business in 1979 [Gillette, 1979]. William Mass [1982], Executive Vice-President of FTD, at the 1982 Ohio Florists' Short Course, reported that, in a 1980 survey of FTD members, funerals and memorial orders had dropped to 29 percent of members' business.

Florists have argued for years that funeral flowers are essential for the bereaved; they set up the Florists' Information Council (FIC) to

try to convince the public, in a behind-the-scenes role, of this fact. The FIC's main task is to work with newspapers and funeral directors to discourage placing "Please Omit"'s in obituary columns.

The second occasion group of importance according to the FTD Fact Books is holidays, and from florists' remarks, one might guess that this category has grown tremendously, perhaps to a dominant position. Holidays in 1970 accounted for a median 21 percent of total retail operations according to the 1977 FTD Fact Book; by 1975, this figure had risen to 23 percent of the average shop's business. Furthermore, 1975 data indicated that holidays played a slightly larger role in metro-politan area shops' business than in the business of an average non-metropolitan area shop. Bill Mass [1982] reported that, in 1980, holidays accounted for 24 percent of FTD members' sales.

Holidays also play a key role in determining the peak sales months of the wire services. In 1980, December accounted for 15 percent of FTD sales. May was the next most important wire service sales month; 13.3 percent of FTD's sales fell in May in 1980. Finally, March or April, depending on which month Easter falls in, can be an important sales month [FTD, 1982c].

Reports indicate that there is some movement in the importance of the various holidays. Christmas and Mother's Day have battled for top holiday honors for years. As the former holiday's business tends to last over several weeks, the latter would definitely have to be ranked as the largest single-day holiday. Furthermore, Christmas business involves large amounts of greenery (wreaths, roping, etc.), as well as holiday plants. Although Mother's Day gifts may include plants, such as azaleas, potted chrysanthemums, or the like, this holiday definitely

would surpass Christmas in terms of cut flower sales. Wholesalers report it to be the holiday moving the largest volume of cut flowers.

The next two holidays in importance are Easter and Valentine's Day. Here again, Easter is largely a holiday-plant occasion (Easter lilies). Valentine's Day, which is challenging Easter in overall importance, definitely is reported to be bigger in cut flower sales. As a matter of fact, many wholesalers report that the dollar volume of Valentine's Day even exceeds that of Mother's Day, even though more flower units are moved at the latter.

Beyond these four holidays, importance of holidays to the average retailer is variable with the region or with the florist. Thanksgiving seems to be increasing slightly in importance in many areas, and it is typically a florist's fifth most important holiday. Mother-in-Law's Day, a relatively new creation, is gaining strength fast. Memorial Day, once a big holiday, is now equivalent to just a good week in most parts of the country; an exception is in the Rocky Mountain states where the holiday seems still to be of some import. In many parts of the country, Father's Day, St. Patrick's Day and even Rosh Hashanah (Jewish New Year) surpass Memorial Day in importance. Other holidays seem to be of minor consequence in some areas, at best.

One relatively new holiday, created by the Society of American Florists, is National Secretary's Day and Week. This holiday has gained in importance, especially in many urban areas. Some florists report that their business for this week-long celebration is equivalent to two "normal" weeks in sales. Table 3-1 showed how the importance of various holidays has changed over the past decade.

The FTD Fact Books suggest that illnesses and maternity gifts are next in importance in total retail operations for the average (member) flower shop. In both 1970 and 1975, a median 16 percent of total operations were attributed to this category; in both instances, the smaller metropolitan areas attributed more of their business to illness and maternity occasions than did either the top metropolitan or non-metropolitan area florists. Multi-unit shops did slightly more illness/maternity business than did single unit businesses [FTD, 1977]. Edd Buckley [1980] reported that hospital pieces dropped in number about 8 percent between 1977 and 1978. The value of sales was virtually unchanged in total, however, as price increases of roughly 8.4 percent per unit kept dollar sales volumes stable. Herb Mitchell estimated that illness and maternity business still was 16 percent of retail florists' operations in 1979 [Gillette, 1979]. The 1980 FTD member census showed such hospital-type arrangements accounting for about 15 percent of sales, however [FTD, 1982c].

Birthdays and anniversaries fall next in importance, according to the FTD Fact Books. In 1970, these affairs accounted for a median 10 percent of total retail operations, while in 1975, the share of the business attributed to birthdays and anniversaries had risen to 11 percent of the total. Top-metropolitan area shops did substantially more birthday and anniversary business than did non-metropolitan area shops. Small-metropolitan area shops' birthday and anniversary business placed between that of the non-metropolitan and top-metropolitan area shops in importance to overall retail operations [FTD, 1977]. Edd Buckley [1980] reported that the retail proportion of anniversary sales remained virtually unchanged between 1977 and 1978. The price per unit,

however, rose about 8 percent, while the number of anniversary-related units dropped about 7 percent over the period. Herb Mitchell estimated that 1979 birthday/anniversary florists' sales accounted for 10 percent of operations [Gillette, 1979]. By the 1980 FTD member census, 12 percent of florists' sales were attributed to this category [FTD, 1982c].

Weddings ranked with birthdays and anniversaries in importance, as they also accounted for a median 10 percent of total retail operations in 1970, and 11 percent of total retail operations in 1975. Smaller metropolitan areas outdistanced top-metropolitan and non-metropolitan area stores in the importance of wedding business to the store. In all locales, single-unit operators reported that slightly more of their business was devoted to weddings than was the case for multi-unit firms [FTD, 1977]. Herb Mitchell estimated in 1979 that weddings were still approximately 10 percent of retail florists' business operations [Gillette, 1979]. This percentage was confirmed in 1980 by the FTD member census [FTD, 1982c].

Finally, the 1977 FTD Fact Book reports that business gifts accounted for a median 7 percent of total retail operations in 1970 and 5 percent of total operations in 1975. Multi-unit shops did slightly more of their business in this area than did single unit firms, and metropolitan area shops placed a higher reliance on business gift sales than did non-metropolitan area outlets. There was no pattern as to whether top-metropolitan area shops or smaller metropolitan area shops relied more on business gift sales, however [FTD, 1977]. Herb Mitchell estimated that 1979 "commercial sales" were 5 percent of retail florists' operations. He also concluded that 1 percent of sales went

for everyday use [Gillette, 1979]. The 1980 FTD member census reported a median 4 percent of florists' sales attributed to each of the following categories: business gifts, thank you's/hospitality and everyday use [FTD, 1982c].

It should again be noted that due to the use of median sales percentage figures, the FTD Fact Books breakdown by occasion figures add to 106 percent in 1970, 103 percent in 1975 and 102 percent in 1980. Yet, as the figures still give an indication of sales patterns over time, they were used. The figures, adjusted to equal 100 percent (except due to rounding), are summarized, together with Herb Mitchell's 1979 estimates [Gillete, 1979] and Havis's [1967] 1964-65 figures, in Table 5-1.

Seasonal variations also occur in the florist business for reasons other than those explained by the holidays alone. December through March, corresponding to the harsh winter months, account for a greater than average number of deaths during the year. May through October is the heavy wedding season and the months of March, December and July through October are peak months for births in the United States [FTD, 1982a].

The FTD Fact Books also indicate that florists estimated between 46 and 52 percent of their 1975 sales were accounted for by sales of arranged fresh flowers (dependent upon metropolitan vs. non-metropolitan location and multi- vs. single-unit operations). In 1980, between 42 and 51 percent of sales were attributed to arranged fresh flowers (dependent upon region of the country). Similarly, between 5 and 9 percent of 1975 sales and between 3 and 10 percent of 1980 sales were for sales of unarranged fresh flowers [FTD, 1977, 1982c]. (Furthermore, data

Table 5-1. Estimated Percentage Breakdown by Occasions of Total Retail Florists' Operations for 1964-65, 1970, 1975, 1979 and 1980

Occasion	1980 <sup>a</sup>	1979	1975 <sup>a</sup>	1970 <sup>a</sup>	1964-65
	----- (%) <sup>b</sup> -----				
Funeral/Memorial	28.4	33.0	35.9	39.6	46.0
Holiday <sup>c</sup>	23.5	25.0	22.3	19.8	--
Illness/Maternity	14.7	16.0	15.5	15.1	19.0
Birthday/Anniversary <sup>c</sup>	11.8	10.0	10.7	9.4	--
Weddings	9.8	10.0	10.7	9.4	9.0
Commercial	3.9	5.0	4.9	6.6	4.0
Everyday Use <sup>c</sup>	3.9	1.0	--	--	--
Thank-you/Hospitality <sup>c</sup>	3.9	--	--	--	--
Church Use <sup>c</sup>	--	--	--	--	5.0
Home Use <sup>c</sup>	--	--	--	--	10.0
Other <sup>c</sup>	--	--	--	--	7.0
Total	100.0	100.0	100.0	100.0	100.0

<sup>a</sup>For years 1970, 1975 and 1980, data represent sales of FTD members and may not necessarily be typical of the entire industry. These data were originally reported as median percentages and were herein adjusted to add to 100.0 percent (except due to rounding).

<sup>b</sup>Numbers may not add to 100.0 percent due to rounding.

<sup>c</sup>Categories used were not identical among the surveys. Obviously some overlap must exist among these categories.

SOURCE: 1980 data, FTD [1982c]; 1979 data, Gillette [1979]; 1975 and 1970 data, FTD [1977]; and 1964-65 data, Havis [1967].



revealed 1975 sales to also include the following merchandise categories (percentages are dependent upon shop locations and type of operation (single- vs. multi-unit)): flowering pot plants (15 to 19 percent of sales), green plants (14 to 16 percent), artificial flowers (3 to 8 percent), dried and silk flowers (6 to 7 percent) and giftware (1 to 5 percent). In 1980, sales categories included the following: green/ foliage plants (14 to 19 percent), flowering potted plants (11 to 18 percent), artificial/silk flowers and plants (8 to 13 percent), dried/ natural flowers and arrangements (5 to 7 percent) and giftware (1 to 2 percent of sales), depending on region of the country [FTD, 1977, 1982c].)

Beyond these occasions are many "non-occasions" for which flowers are (not given, but) purchased. These non-occasions are often referred to as involving flowers purchased for personal use or enjoyment or for home decoration [Joseph, 1981]. Mass market sales which are impulse in nature, are more responsible for these personal flower purchases than are traditional retail florists, or so most theorize [Zawadzki et al., 1960]. As reports from several supermarkets indicate, floral marketings now represent substantial portions of supermarket sales and now are contributing noticeable amounts to profits [Zwieback, 1974, 1975; Elson, 1975; Anonymous, 1973]. Such reports have only spurred interest in mass marketing. The greater availability that has resulted and the interest that continues to build will likely increase the proportion of flowers purchased as mass markets. This will, in turn, probably lead to an increase in flowers purchased for non-occasions, as well as the total numbers of flowers purchased.

In examining industry figures, the first fact of which one becomes cognizant is that the data are limited. Yet, even with the limited information, one is able to get some indications that the cut flower industry is changing. Table 5-2, for instance, shows that the number of flower shops in the United States has increased over the last several decades. The Floral Index estimates that there are now 29,000 flower shops in the U.S. [Joseph, 1981]. If true, the number has remained relatively unchanged since the late 1970s.

It should be noted that the increase in flower shop numbers between 1972 and 1977 was considerably higher than for any other inter-census period. This large growth may be from the possible inclusion of many plant boutiques in the data. Many of these boutiques were the result of the increased demand associated with the foliage plant boom of the late 1970s. To a certain extent, this foliage plant industry expansion has subsided [Smith et al., 1981]. Many of these less-than-full-service plant boutiques have also closed.

Table 5-3 indicates that sales have steadily increased in terms of nominal dollars for the florist shop industry. Table 5-3, however, shows that, in terms of real (constant) dollars, a deviant appeared in the double-digit inflationary period near 1977. Spending did not keep pace with inflation.

Table 5-4, noting per capita sales for the 50 states, can also be misleading. It shows per capita floral expenditures to rise steadily over the period. Table 5-3, on the other hand, confirmed that spending did not keep up with inflation. It then becomes curious as to why the 1970s saw an expansion in the number of flower shops from the steady

Table 5-2. Number and Sales of Florist Shops in the 50 States and the District of Columbia for Selected Years

State	1958			1963			1967			1972			1977 <sup>a</sup>		
	Florist Shops	Sales (\$1,000)	(number)	Florist Shops	Sales (\$1,000)	(number)	Florist Shops	Sales (\$1,000)	(number)	Florist Shops	Sales (\$1,000)	(number)	Florist Shops	Sales (\$1,000)	(number)
Alabama	383	9,716	499	499	13,598	497	497	17,693	596	596	28,018	670	670	41,036	670
Alaska	18 <sup>b</sup>	637 <sup>b</sup>	13	589	176	10	10	861 <sup>c</sup>	32	32	1,874	49	49	5,344	49
Arizona	106	4,091	113	5,034	176	130	130	7,133	297	297	13,908	234	234	21,747	234
Arkansas	198	4,634	193	5,797	242	242	242	8,126	1,981	1,981	13,887	2,553	2,553	23,882	2,553
California	1,515	54,651	1,604	70,324	1,785	1,785	1,785	96,912	2,776	2,776	137,964	343	343	225,126	343
Colorado	160	5,817	187	8,364	234	234	234	11,600	334	334	19,802	430	430	32,101	430
Connecticut	305	10,075	317	13,519	346	346	346	19,022	59	59	25,340	79	79	34,807	79
Delaware	59	1,954	44	2,072	52	52	52	3,492	61	61	5,095	61	61	6,989	61
District of Columbia	94	5,417	78	7,050	75	75	75	7,961	997	997	10,301	1,266	1,266	12,794	1,266
Florida	505	16,027	616	19,681	31,800	758	758	31,800	997	997	64,847	1,266	1,266	100,314	1,266
Georgia	500	12,760	621	17,590	691	691	691	25,082	819	819	43,901	946	946	60,579	946
Hawaii	118 <sup>b</sup>	2,972 <sup>b</sup>	120	3,981	158	158	158	6,678	175	175	10,274	171	171	16,667	171
Idaho	67	2,016	63	2,360	73	73	73	2,957	83	83	5,387	124	124	10,070	124
Illinois	1,022	42,898	1,042	48,581	1,074	1,074	1,074	70,083	1,191	1,191	103,486	1,329	1,329	146,308	1,329
Indiana	442	14,990	471	19,569	558	558	558	29,298	602	602	41,252	740	740	61,507	740
Iowa	225	7,579	244	9,590	266	266	266	14,910	336	336	21,032	399	399	34,802	399
Kansas	247	7,495	223	8,462	264	264	264	11,778	300	300	18,119	358	358	29,893	358
Kentucky	282	9,421	341	11,642	363	363	363	18,166	424	424	26,194	532	532	41,717	532
Louisiana	300	9,680	255	10,775	369	369	369	16,244	424	424	23,516	516	516	39,295	516
Maine	98	2,834	105	3,567	117	117	117	5,230	121	121	7,492	141	141	9,723	141
Maryland	245	8,559	239	11,521	281	281	281	19,505	314	314	28,775	449	449	46,718	449
Massachusetts	679	21,203	666	26,057	699	699	699	34,482	698	698	46,740	808	808	63,106	808
Michigan	739	26,834	763	33,210	809	809	809	47,660	878	878	69,010	1,023	1,023	100,234	1,023
Minnesota	207	11,328	199	12,379	260	260	260	17,661	328	328	29,736	387	387	41,543	387
Mississippi	253	5,789	257	6,278	333	333	333	10,526	366	366	15,551	425	425	23,451	425
Missouri	404	16,436	408	18,756	538	538	538	28,090	566	566	37,064	651	651	53,666	651
Montana	65	2,414	57	2,551	62	62	62	3,045	70	70	5,152	89	89	7,771	89
Nebraska	130	5,072	131	5,824	172	172	172	8,691	163	163	11,309	198	198	17,076	198
Nevada	26	943	29	2,385	41	41	41	2,522	44	44	5,160	78	78	9,354	78
New Hampshire	73	2,005	66	2,739	100	100	100	4,850	96	96	6,539	129	129	8,482	129

Table 5-2. Continued

State	1958			1963			1967			1972			1977 <sup>a</sup>		
	Florist Shops	Sales	(number)	Florist Shops	Sales	(number)	Florist Shops	Sales	(number)	Florist Shops	Sales	(number)	Florist Shops	Sales	(number)
New Jersey	799	25,152	820	820	31,589	844	844	39,648	794	56,198	1,002	76,724	1,002	76,724	1,002
New Mexico	72	2,373	64	2,707	3,711	83	3,711	6,103	103	133,555	118	9,890	118	9,890	118
New York	1,946	74,144	1,869	86,037	1,959	108,546	1,846	26,980	867	41,230	2,039	159,676	2,039	159,676	2,039
North Carolina	579	13,462	686	18,108	1,593	40	26,980	4,008	52	7,318	1,017	64,308	1,017	64,308	1,017
North Dakota	20	1,119	32	1,593	86	2,106	86	60,406	1,209	87,291	75	7,318	75	7,318	75
Ohio	1,049	34,832	1,024	43,324	1,143	60,406	1,143	13,360	409	21,863	464	33,581	464	33,581	464
Oklahoma	249	7,805	254	9,406	1,300	13,360	1,300	9,956	247	14,881	326	25,397	326	25,397	326
Oregon	195	7,303	182	6,491	230	9,956	230	69,147	1,418	88,779	1,610	131,664	1,610	131,664	1,610
Pennsylvania	1,386	45,735	1,375	50,251	1,483	69,147	1,483	4,654	129	7,947	136	10,122	136	10,122	136
Rhode Island	120	2,607	99	3,274	120	10,883	120	18,611	464	18,611	508	26,731	508	26,731	508
South Carolina	301	5,286	321	6,539	392	2,525	392	3,808	71	3,808	82	6,075	82	6,075	82
South Dakota	39	1,280	41	1,339	52	23,699	52	59,399	1,758	91,250	2,177	158,777	2,177	158,777	2,177
Tennessee	449	13,984	476	17,216	1,589	59,399	1,589	7,614	108	7,614	147	14,849	147	14,849	147
Texas	1,370	35,838	1,347	41,753	89	5,206	89	2,003 <sup>d</sup>	57	2,915	61	3,641	61	3,641	61
Utah	104	2,581	84	3,344	33	1,032	33	30,591 <sup>d</sup>	479	36,180	645	56,095	645	56,095	645
Vermont	36	915	351	20,170	405	15,862	405	15,862	372	24,099	493	43,059	493	43,059	493
Virginia	301	13,646	259	10,106	308	10,617	308	18,825	182	16,028	243	25,932	243	25,932	243
Washington	293	9,116	174	8,056	172	18,825	172	1,781	46	2,218	508	42,977	508	42,977	508
West Virginia	156	5,707	332	12,673	414	1,549	414	1,781	46	2,218	66	5,138	66	5,138	66
Wisconsin	361	11,611	54	1,549	49	1,781	49	1,102,053	24,464	1,604,801	29,375	2,400,026	29,375	2,400,026	29,375
Wyoming	40	1,083	19,801	780,407	22,451	1,102,053	22,451	1,604,801	24,464	1,604,801	29,375	2,400,026	29,375	2,400,026	29,375
U.S. Total	19,312	642,007	19,801	780,407	22,451	1,102,053	22,451	1,604,801	24,464	1,604,801	29,375	2,400,026	29,375	2,400,026	29,375

<sup>a</sup>Preliminary<sup>b</sup>Not included in U.S. total originally but these data have been added for this table to the U.S. total.

<sup>c</sup>The total sales for Alaska were not reported to avoid disclosure of individual operations. Further examination of the individual state report shows that Alaska had nine shops reporting sales of \$766,000, with a tenth shop, sales undisclosed, with sales in the \$50,000 to \$99,000 range. The midpoint of \$75,000 was used to represent the sales of the tenth shop (to minimize possible error), and this was added to the \$766,000.

<sup>d</sup>The total sales for Virginia were not reported to avoid disclosure of individual operations. Further examination of the individual report shows that Virginia had 397 shops with sales of \$29,597, with eight more shops which did not operate for the entire year, but which probably operated on a seasonal basis. Subtraction of the 49 other states (realizing a possible error may exist for Alaska (see footnote "c" above)) from the U.S. total, yields \$30,591,000 in sales for the state of Virginia.

SOURCE: U.S. Bureau of the Census, *Census of Retail Trade* [various years].

Table 5-3. Sales, Per Capita Sales, and Adjusted (to 1980 Dollars) Sales and Per Capita Sales of U.S. Florist Shops for Selected Years

Year	Total U.S. Sales		Per Capita Sales	
	Current \$	Adjusted \$ (1980)	Current \$	Adjusted \$ (1980)
	----- (\$1,000) -----			
1958	642,007	1,824,402	3.69	10.49
1963	780,407	2,217,695	4.14	11.77
1967	1,102,053	2,962,508	5.58	15.00
1972	1,604,801	3,621,758	7.71	17.40
1977	2,400,026	3,321,835	11.09	15.35

SOURCES: Sales from U.S. Bureau of the Census, Census of Retail Trade [various issues]. Adjusted Sales based on Consumer Price Index [USDA, ERS, 1981]. Per Capita Sales calculated based on Census Bureau population data [U.S. Bureau of the Census, Statistical Abstract of the United States, various years].

Table 5-4. Resident Populations, Florist Shops Per 10,000 People and Florists' Sales Per Capita for the 50 States and the District of Columbia, for Selected Years

	1968			1963			1957			1947			1937		
	Population (1,000)	Shops Per 10,000 People	Sales Per Capita (\$)	Population (1,000)	Shops Per 10,000 People	Sales Per Capita (\$)	Population (1,000)	Shops Per 10,000 People	Sales Per Capita (\$)	Population (1,000)	Shops Per 10,000 People	Sales Per Capita (\$)	Population (1,000)	Shops Per 10,000 People	Sales Per Capita (\$)
Alabama	3,462	1.7	3.07	3,358	1.5	4.05	3,458	1.4	5.12	3,514	1.7	7.97	3,691	1.8	11.17
Alaska	1,018	0.0	0.00	1,018	0.0	0.00	1,018	0.0	0.00	1,018	0.0	0.00	1,018	0.0	0.00
Arizona	1,193	0.9	5.81	1,526	0.7	5.00	1,778	0.4	3.10	1,970	0.0	5.75	2,113	1.2	12.94
Arkansas	1,726	1.1	2.68	1,075	1.0	3.09	1,001	1.3	4.27	1,993	1.3	6.96	2,162	1.9	10.10
California	14,699	1.0	3.67	17,668	0.9	3.98	19,176	0.9	5.05	20,437	1.0	6.75	21,497	1.2	10.29
Colorado	2,446	1.0	3.85	2,446	1.0	4.36	2,446	1.0	4.36	2,446	1.0	4.36	2,446	1.0	4.36
Connecticut	2,446	1.2	4.12	2,727	1.2	4.96	2,935	1.2	6.48	3,032	1.1	8.22	3,107	1.4	12.00
Delaware	433	1.4	4.51	463	0.9	4.29	463	1.0	6.65	569	1.0	8.95	592	1.4	12.01
District of Columbia	757	1.2	7.16	798	1.0	8.83	791	0.9	10.65	785	0.8	13.93	825	0.9	10.68
Florida	4,619	1.1	3.47	5,628	1.1	3.50	6,247	1.2	5.09	7,391	1.3	9.37	8,466	1.5	11.95
Georgia	3,098	1.3	3.35	4,172	1.5	5.22	4,495	1.6	5.69	4,788	1.7	9.23	5,081	1.9	12.02
Idaho	605	2.0	4.91	683	1.5	4.22	683	1.1	4.30	785	1.1	7.14	856	1.4	11.76
Illinois	9,695	1.0	4.24	10,402	1.0	4.67	10,447	1.0	6.40	11,209	1.1	9.23	11,238	1.2	13.03
Indiana	2,208	0.8	2.80	2,747	0.9	1.49	2,793	1.0	5.34	2,856	1.1	7.36	2,903	1.4	10.09
Iowa	2,142	1.2	3.50	2,217	1.0	3.82	2,197	1.2	5.36	2,257	1.3	8.01	2,320	1.5	12.89
Kansas	2,111	1.0	3.09	3,096	1.1	3.76	3,172	1.1	5.73	3,301	1.1	7.94	3,468	1.5	12.03
Kentucky	2,111	1.0	3.09	3,096	1.1	3.76	3,172	1.1	5.73	3,301	1.1	7.94	3,468	1.5	12.03
Louisiana	944	1.0	3.00	931	1.1	3.59	1,004	1.2	5.21	1,024	1.2	7.20	1,008	1.1	8.97
Maine	2,082	0.8	2.01	3,306	0.7	3.40	3,752	0.7	5.19	4,063	0.7	7.05	4,132	1.1	11.29
Massachusetts	5,010	1.4	4.23	5,344	1.2	4.80	5,594	1.2	6.16	5,778	1.2	7.09	5,777	1.1	10.29
Michigan	7,667	1.0	3.51	8,058	0.9	4.12	8,330	0.9	5.52	9,024	1.0	7.64	9,140	1.1	10.96
Minnesota	3,113	0.6	3.42	3,511	0.6	3.51	3,659	0.7	4.93	3,870	0.8	7.65	4,070	1.0	10.41
Mississippi	4,105	1.0	3.91	4,392	0.9	4.29	4,539	1.2	6.19	4,747	1.2	7.81	4,822	1.4	11.11
Missouri	666	1.0	3.62	703	0.8	3.63	703	0.9	4.34	718	1.0	7.14	766	1.2	10.14
Montana	1,343	1.0	3.51	1,457	0.7	5.97	1,457	0.7	5.97	1,457	0.7	5.97	1,457	0.7	5.97
Nebraska	1,343	1.0	3.51	1,457	0.7	5.97	1,457	0.7	5.97	1,457	0.7	5.97	1,457	0.7	5.97
Nevada	501	1.3	3.51	649	1.0	4.22	697	1.4	6.96	766	1.2	8.43	834	1.5	9.90

Table 5-4. Continued

State	1968			1963			1967			1977		
	Population (1,000)	Shops Per 10,000 People	Sales Per Capita (\$)	Population (1,000)	Shops Per 10,000 People	Sales Per Capita (\$)	Population (1,000)	Shops Per 10,000 People	Sales Per Capita (\$)	Population (1,000)	Shops Per 10,000 People	Sales Per Capita (\$)
New Jersey	5,890	1.3	4.27	6,531	1.3	4.84	6,928	1.2	5.72	7,333	1.1	7.66
New Mexico	806	0.8	2.77	862	0.6	2.74	1,000	0.8	3.71	1,122	1.1	7.40
New York	16,001	1.2	4.47	17,401	1.4	3.82	17,000	1.1	6.05	18,360	1.0	7.27
North Carolina	4,205	1.3	3.00	4,742	1.4	3.82	4,955	1.1	5.36	5,256	1.6	7.64
North Dakota	9,599	1.1	3.65	9,644	0.5	2.48	9,626	0.5	3.36	10,727	0.8	6.35
Ohio	2,567	1.1	3.14	2,439	1.0	3.34	10,414	1.1	5.80	10,727	1.6	8.29
Oregon	2,567	1.1	4.25	1,853	1.0	3.50	1,979	1.4	5.37	2,636	1.6	8.29
Pennsylvania	11,028	1.1	4.25	11,824	1.2	4.40	11,681	1.3	5.97	12,100	1.1	6.83
Rhode Island	808	1.4	3.04	876	1.1	3.74	909	1.3	5.12	971	1.3	6.18
South Carolina	2,304	1.1	2.29	2,460	1.3	2.66	2,533	1.5	4.30	2,601	1.7	6.94
South Dakota	656	0.6	1.89	666	0.6	1.89	3,671	0.8	3.76	6,677	1.5	8.78
Tennessee	3,471	1.3	4.03	3,718	1.3	4.11	3,671	1.4	6.14	4,019	1.5	7.85
Texas	9,835	1.5	3.10	10,159	1.3	4.11	10,599	0.9	5.30	11,619	1.5	7.85
Utah	330	0.9	2.43	374	0.9	3.43	1,019	0.9	5.30	1,270	1.2	6.09
Vermont	330	0.9	2.43	374	0.9	3.43	1,019	0.9	5.30	1,270	1.2	6.09
Washington	2,914	0.8	3.49	4,276	0.8	4.27	4,823	1.2	4.74	4,611	1.2	6.09
West Virginia	1,605	0.8	3.29	2,955	0.9	3.42	2,174	0.9	6.79	4,705	1.0	7.66
Wisconsin	3,843	0.9	4.02	4,116	1.0	4.49	1,669	1.0	6.00	1,761	1.1	7.02
Wyoming	315	1.3	3.44	336	1.6	4.61	4,303	1.0	4.37	4,508	1.3	6.41
U.S. Total	114,189	1.1	3.69	109,430	1.1	4.14	197,374	1.1	5.50	208,214	1.2	7.71
										216,301	1.4	11.09

\*Provisionary

SOURCE: Population data from U.S. Bureau of the Census, Current Population Estimates—Series P25 (various years).  
Shops per 10,000 people and sales per capita data adapted from Table 5.2.

1.1 shops per 10,000 people of the late 1950s and 1960s to the 1.2 shops and 1.4 shops per 10,000 people of 1972 and 1977, respectively.

Table 5-5 may explain some of the strengths and weaknesses of the industry, as it breaks down per capita sales and shops per 10,000 people on a regional basis. It shows that the industry has faced higher than average stagnation in the New England states, in the mid-Atlantic states and in the Pacific states; per capita sales have fallen substantially behind the national average in these areas.

It is important to note, however, that these figures only speak of the florist shop segment of the industry. The mass market is excluded from these tabulations. Yet, the mass marketing of floricultural crops is probably among the most advanced in the three regions with less than average per capita flower shop sales, i.e., the New England, mid-Atlantic and Pacific regions.

Furthermore, the figures speak of the florist industry. Although this industry is the purveyor of the majority of cut flowers, what is true for florists does not necessarily apply to cut flowers. Cut flowers are only one item among many in flower shops today. For the six months from September 1978 through February 1979 cut flowers comprised from 36 percent to 54 percent of the product mix sold in flower shops, depending on the month [The Floral Index, Inc., 1980].

Hence, one might like to check other data to "get a feel" for the cut flower industry. Referring back to Tables 4-10 through 4-13, one can note the following changes in per capita consumption of various species during the 1970s: per capita consumption of carnations fluctuated, per capita consumption of standard chrysanthemums dropped, per capita consumption of pompon chrysanthemums rose slightly and per



Table 5-5. Regional Comparisons of Resident Populations, Florist Shops Per 10,000 People and Florists' Sales Per Capita, for Selected Years

Year	Population	Shops Per 10,000 People	Sales Per Capita
	(1,000)	(Number)	(\$)
<u>New England<sup>a</sup></u>			
1958	10,219	1.3	3.89
1963	10,986	1.2	4.57
1967	11,562	1.2	6.08
1972	12,097	1.2	8.02
1977 <sup>b</sup>	12,237	1.4	10.61
<u>West-North Central<sup>c</sup></u>			
1958	14,994	0.8	3.36
1963	15,715	0.8	3.69
1967	15,942	1.0	5.38
1972	16,557	1.1	7.55
1977 <sup>b</sup>	16,903	1.3	11.26
<u>West-South Central<sup>d</sup></u>			
1958	16,400	1.3	3.53
1963	17,850	1.1	3.79
1967	18,570	1.4	5.23
1972	19,986	1.4	7.53
1977 <sup>b</sup>	21,705	1.6	11.77
<u>Mid-Atlantic<sup>e</sup></u>			
1958	33,549	1.2	4.32
1963	35,416	1.1	4.74
1967	36,544	1.2	5.95
1972	37,567	1.1	7.41
1977 <sup>b</sup>	37,066	1.3	9.93

Table 5-5. Continued

Year	Population	Shops Per 10,000 People	Sales Per Capita
	(1,000)	(Number)	(\$)
<u>South Atlantic<sup>f</sup></u>			
1958	25,045	1.1	3.31
1963	27,741	1.1	3.99
1967	29,485	1.2	5.66
1972	32,029	1.3	8.27
1977 <sup>b</sup>	34,252	1.5	11.69
<u>Mountain<sup>g</sup></u>			
1958	6,487	1.0	3.29
1963	7,539	0.9	3.75
1967	7,878	1.0	4.83
1972	8,905	1.0	7.34
1977 <sup>b</sup>	10,088	1.2	11.00
<u>East-North Central<sup>h</sup></u>			
1958	35,578	1.0	3.69
1963	37,357	1.0	4.21
1967	39,347	1.0	5.75
1972	41,202	1.0	7.98
1977 <sup>b</sup>	41,066	1.2	11.44
<u>East-South Central<sup>i</sup></u>			
1958	11,681	1.2	3.33
1963	12,416	1.3	3.93
1967	12,717	1.4	5.51
1972	13,143	1.5	8.02
1977 <sup>b</sup>	13,837	1.7	11.53

Table 5-5. Continued

Year	Population	Shops Per 10,000 People	Sales Per Capita
	(1,000)	(Number)	(\$)
	<u>Pacific<sup>j</sup></u>		
1958	20,160	1.1	3.70
1963	23,414	0.9	3.91
1967	25,330	1.0	5.14
1972	27,197	1.0	6.95
1977 <sup>b</sup>	29,257	1.2	10.79

<sup>a</sup>New England includes Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut.

<sup>b</sup>All 1977 data are preliminary.

<sup>c</sup>West-North Central includes Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska and Kansas.

<sup>d</sup>West-South Central includes Arkansas, Louisiana, Oklahoma and Texas.

<sup>e</sup>Mid-Atlantic includes New York, New Jersey and Pennsylvania.

<sup>f</sup>South Atlantic includes Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia and Florida.

<sup>g</sup>Mountain includes Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah and Nevada.

<sup>h</sup>East-North Central includes Ohio, Indiana, Illinois, Michigan and Wisconsin.

<sup>i</sup>East-South Central includes Kentucky, Tennessee, Alabama and Mississippi.

<sup>j</sup>Pacific includes Washington, Oregon, California, Alaska and Hawaii.

SOURCE: Data adapted from Tables 5-2 and 5-4. Regional classifications are the same as used by the Bureau of the Census for its Census of Retail Trade.

capita consumption of roses barely fluctuated at all. These same tables, however, do show that the domestic growing industry has basically declined, while cut flower producers in other countries have expanded their sales to the U.S. Even the wholesale value of the domestic production of these major species has declined, as Table 3-4 confirmed.

Yet, there is some evidence that the buying public may only be abandoning use of the major species and switching their purchases to more exotic flower species. In an August 1981 Wall Street Journal article, Raymond Joseph used an estimate made by the Floral Report, which stated that sales revenues for all fresh-cut flowers rose 29 percent from 1979 to 1980 to \$2.7 billion (retail). (One should note, however, that the Consumer Price Index rose almost 14 percent over the same period, thereby deflating some of the excitement obtained from reporting such an increase in sales.) The reported increase is spectacular news, especially in light of production statistics and the per capita consumption statistics. The article suggested that many minor species were contributing to the industry surge [Joseph, 1981].

Of the future, of course, one can only speculate. Tables 5-6, 5-7, 5-8 and 5-9 may provide some clues as to trends that the occasions, for which flower arrangements are traditionally given, might follow. Table 5-6 shows the presence of a cyclic nature to the birth rate in the U.S. Births, which may translate into maternity and congratulatory arrangements and adolescent birthdays, for florists, are currently on the rise, as the post-World War II baby boom progeny now are forming households, having children and raising families.

Table 5-6. U.S. Births Per 1,000 Population, 1960-1979

Year	Rate
1960	23.7
1961	23.3
1962	22.4
1963	21.7
1964	21.0
1965	19.4
1966	18.4
1967	17.8
1968	17.5
1969	17.8
1970	18.4
1971	17.2
1972	15.6
1973	14.9
1974	14.9
1975	14.8
1976	14.8
1977	15.4
1978	15.3
1979	15.8

SOURCE: U.S. Bureau of the Census, Statistical Abstract of the United States [various years].

Table 5-7. U.S. Marriages Per 1,000 Population and Marriages Per 1,000 Unmarried Women Age 15 and Above, 1960-1979

Year	Marriages Per 1,000 Population	Marriages Per 1,000 Unmarried Women $\geq$ 15
1960	8.5	73.5
1961	8.5	72.2
1962	8.5	71.2
1963	8.8	73.4
1964	9.0	74.6
1965	9.3	75.0
1966	9.5	75.6
1967	9.7	76.4
1968	10.4	79.1
1969	10.6	80.0
1970	10.6	76.5
1971	10.6	72.8
1972	11.0	77.9
1973	10.9	76.0
1974	10.5	72.0
1975	10.1	66.9
1976	10.0	65.2
1977	10.1	63.6
1978	10.5	64.1
1979	10.7	n.a.

SOURCE: U.S. Bureau of the Census, Statistical Abstract of the United States [various years].

Table 5-8. U.S. Hospital Admissions, 1960-1977

Year	Millions
1960	25.0
1961	25.5
1962	26.5
1963	27.5
1964	28.3
1965	28.8
1966	29.2
1967	29.4
1968	29.8
1969	30.7
1970	31.8
1971	32.7
1972	33.3
1973	34.4
1974	35.5
1975	36.2
1976	37.1
1977	37.2

SOURCE: U.S. Bureau of the Census, Statistical Abstract of the United States [various years].

Table 5-9. U.S. Deaths Per 1,000 Population, 1960-1979

Year	Rate
1960	9.5
1961	9.3
1962	9.5
1963	9.6
1964	9.4
1965	9.4
1966	9.5
1967	9.4
1968	9.7
1969	9.5
1970	9.5
1971	9.3
1972	9.4
1973	9.4
1974	9.2
1975	8.8
1976	8.9
1977	8.8
1978	8.8
1979	8.7

SOURCE: U.S. Bureau of the Census, Statistical Abstract of the United States [various years].



Table 5-7 shows that there is also some fluctuation that occurs in the marriage rate. As the babies comprising the post-World War II boom grow up and marry, rates may climb, signaling glee for the bridal bouquet makers. As social mores change to "allow" unmarried couples to cohabit residences, the marriage rate may fall. Furthermore, increased occurrences of divorces and subsequent remarriages may have another effect on the marriage rate. To the florist, however, this latter marriage type does not always translate into business, as ready-to-remarry brides do not always follow the floral consumption patterns of the initial marriage [Leavitt, 1981].

Hospitalization seems to be on the increase. Table 5-8 shows that the number of hospital admissions continue to climb. Table 5-1 indicated that 15 percent of the average retail florist's operations were accounted for by hospital/maternity gifts in 1980, down from a previously rising trend. Still, it appears some opportunities will continue to exist in this area.

Finally, Table 5-9 shows that there is a declining death rate in the U.S. The custom of sending flowers to the bereaved is on the decline as well. This, coupled with a decline in the possible funerals to begin with, does not speak well of the future flower business in this area.

Perhaps the real possibilities lie in the use for everyday home decoration and/or personal satisfaction. As the population is on the rise, development of this non-occasion use pattern would be a good omen for the industry. Time will tell whether this evolution takes place.

### Substitutes

When speaking of substitutes and the cut flower industry in the same context, different subjects surface. First, one should address the topic of substitutes for cut flower arrangements. Secondly, one probably should cover the topic of substitutes for fresh cut flowers themselves. Finally, the discussion should include the issue of the substitutability among the various species.

The list of substitutes for flowers seems to be ever growing longer. The most often mentioned substitutes are candy, perfumes and toiletries, wines or champagnes, balloons, singing telegrams, greeting cards, fruit baskets and books. As a matter of fact, many florists now carry one or more of these items for patrons to select, in addition to (or instead of) flowers. Many florists have been known to include bottles of wine or champagne or boxes of candy right in their flower arrangements, e.g., a "bud-and-bubbles" bouquet. Balloons are now common in many shops. Furthermore, as floral gifts grow more expensive, the list of alternatives grows longer. Many florists have renamed their shops as "gift shops" or "flower and gift shops," as many small gifts now directly compete for the consumer's discretionary spending dollars.

Some of these products, although definitely substitutes, are not as deleterious to floral sales as one might expect, due to different market characteristics, clientele, etc. Candy, for instance, experiences its biggest sales season at Christmas. This is followed in order by Halloween, Easter, Valentine's Day and Mother's Day as the chief holidays for the candy business [Shannon, 1981]. These holidays rank differently in importance than for the florist industry (Table 3-1).

Yet, the eroding potential of substitute products such as candy must not be overlooked.

Another area of competition for fresh cut flowers consists of other floral items; they are of two types. First are the other floricultural category items, such as potted blooming plants (e.g., potted chrysanthemums, African violets or holiday plants such as poinsettias and Easter lilies), foliage plants or, perhaps, other floral accessories. Secondly, fresh cut flowers are facing increasing competition from artificial or "permanent" flowers. These would include silk and plastic flowers, as well as dried flowers, which at one time, at least, were fresh cut flowers. (The species used for dried flowers, however, are seldom sold as fresh cut flowers, with the possible exceptions of gypsophila (baby's breath) and statice, which are both frequently used in fresh and dried forms.)

Plastic flowers seem to be continually losing favor in the eyes of most consumers. Silk flowers, on the other hand, are continuing to make inroads into formerly fresh flower-only realms. There have been an increasing number of occasions for which silk flowers have gained at least occasional acceptance. Weddings, with silk flower bride's bouquets, have been a semi-regular occurrence in the industry. There are now instances of non-perishable-only flower shops which cater to those desiring silk, plastic or dried flowers or arrangements. Most traditional flower shops and even some of the newer mass market outlets carry at least some flower inventory in items other than fresh cut flowers. As a matter of fact, FTD [1982c] reported that 92 percent of its members surveyed in 1980 carried artificial/silk flowers, 81 percent

inventoried dried and natural flowers and plants, 31 percent stocked plastic flowers and 8 percent also handled china or glass flowers.

In a 1973 column in Florists' Review, Alex Laurie seemed to suggest that permanent flowers were the alternative selection consumers made when they were dissatisfied with the keeping quality of fresh cut flowers. He admonished the industry that high prices, coupled with short vase life, created an obstacle for the fresh cut flower industry [Laurie, 1973]. Perhaps this admonition is well worth restating today in context of substitutes, as well as in the context of preservatives, as Laurie had intended.

The third dimension of the topic of substitutes deals with the substitutability among various flower species. There are (at least) two sides to the argument. Either one considers all species or perhaps select groups of species to be interchangeable, or one considers each flower species to be separate and distinct. The industry has itself debated this issue on more than one occasion and, at times, the stakes have been high. This issue has even been of central importance when various grower groups have petitioned the U.S. International Trade Commission for import relief.

In analyzing this issue, one must first be cognizant of the spectrum involved. Certainly, if a customer were to request a flower somewhat out of the ordinary, a florist would probably exclude flowers of the major cut flower species, i.e., hybrid tea and miniature/sweetheart roses, standard and miniature/spray carnations, pompon and standard chrysanthemums and gladioli, from consideration. Yet, these flowers might be included in an arrangement if the customer had only requested "a flower arrangement out of the ordinary." In this latter

case, a florist might substitute exceptional creative design for the absence of extraordinary species selection. Occasional color substitutions for the most common flower colors might produce an adequate effect as well.

Yet, there are many occasions where specifics are important and where the ability to substitute is non-existent. Holidays offer a prime example here. Demand is very inelastic around some holidays. For example, red roses at Valentine's Day, while lilies at Easter and poinsettias at Christmas are still the overwhelming traditional favorites. Although red roses sell year-round, lilies and poinsettias are less likely to sell at times other than during their respective holiday periods. Other examples might include bronze colored chrysanthemums, which one finds almost exclusively in the fall, shamrocks which one finds almost exclusively at St. Patrick's Day and white flowers which still dominate the scene at many weddings. Stephanotis is used almost exclusively for wedding work, as are many orchids. Gladioli have been widely used for funeral pieces, memorials and church altar pieces. And, cut pine, fir and spruce are largely reserved for use at Christmas time by many florists. Furthermore, each of the wire services has established a flower selection guide for consumers to pick specific arrangements for wire order business for any special occasion. In addition, some florists even custom paint, tint or dye certain flowers for that perfect match or for a certain effect or specific occasion.

When designing arrangements for the more routine occurrences confronting a floral designer, however, there are also limitations to which florists must sometimes adhere. These are usually imposed by the arrangement order and by the flower type and/or size. For instance,

dinner table arrangements tend to be low so that guests may see one another across the table even when seated on opposite sides of the centerpiece. Church altar pieces tend to be much larger so that parishoners may enjoy their beauty "even unto the last pew." Hence, small-sized flowers would be more likely to be used for the intimate dinner party and large-sized flowers, such as gladioli or standard chrysanthemums, are more likely to be used for altar pieces.

For the typical design, floral designers often observe several principles of art. Color, line, form and texture are among the elements of art considered. Variations in design might use focal points, repetition, transition, unity, simplicity or other qualities to achieve the desired effects. Some flowers obviously lend themselves better for one purpose or another. Hence, bold colored carnations or roses can provide excellent focal points. Spray or spike flowers or foliages might better direct lines in an arrangement. When minimal cost is a concern, cheaper flowers can be used if repetition is a desired quality. Similar tropical flowers might appropriately be employed to convey unity in a design. Yet, even with the artistic concerns involved, great substitutability often exists in design.

Yet, the issue of the substitutability among specific species still exists. Granted is the fact that retail florists buy specific flower types, colors and sometimes grades. It can also be acknowledged that certain limitations do exist in designing, whether imposed by holidays, occasions, art theory or common sense. However, it must be admitted that, at least in the average flower shop, customers often do not really choose the flowers or the flower species they purchase [Voigt, 1981]. An inordinate number of customers do all of their

flower business via telephones, the mail (billings and payments) and delivery vans. Should a customer actually travel to a shop, he or she is likely to find either flowers "protected" behind a glass enclosure or a selection of premade arrangements, which present the limits of available choices. If designers are willing to take time to make special personalized arrangements (not always economical), they, rather than the customers, often suggest the flowers that "would look nice in that type of arrangement" [Voigt, 1982]. These flowers, for obvious reasons, consist of those available in the refrigerator at the time. Even if ordered specifically for some occasion, the arrangement is usually referred to as "a flower arrangement," or "birthday arrangement," "a funeral piece" or, perhaps, "an arrangement of fresh flowers," etc., rather than an arrangement of yellow snapdragons, white button pompon chrysanthemums, pink roses and statice, for instance. Again, holiday arrangements or those designed for specific occasions such as weddings, etc., can provide exceptions to this generalization.

Although there are some flower shops where all flowers are presented in buckets and customers are permitted (and even encouraged) to touch and select their own flowers (e.g., Conroy Flowers chain in California or the Southflower Markets of New York City, Atlanta and Dallas), these are still rare. Furthermore, they are usually confined to large metropolitan areas which can comfortably support a broad yet perishable inventory and the turnover needed for a successful venture. The more typical shop carries a more limited selection. In some areas, one would be lucky to find customer selections even extending to all of the major species at all times.

One could then conclude that there does exist a fair amount of substitutability among the species, as far as for purpose of use is concerned. Such substitutability is often necessary for the average florist to survive his inventory and designing headaches. The species carried by the average florist must be versatile and have a wide and strong enough appeal to warrant being stocked. When addressing the issue of species selections, florists, consciously or unconsciously, have different motives and different *modi operandi*. Questions of personal preferences may influence species selections made by designers, as well as a designer's suggestions to patrons. In addition, adequate supplies, relative prices or the degree of freshness or maturity of the various species currently in stock may influence either flower selections made by designers or suggestions to clients as to what to buy. Hence, it could be concluded that when the need arises, substitutability exists.

At wholesale, however, it will be conceded that the same degree of substitutability does not exist. Florists know the mix of arrangements they sell, and they order their flowers according to their needs. Large flowers are needed for large arrangements; small flowers are needed to create various effects and to satisfy varying tastes. Hence, at wholesale, substitutability is more limited than at retail. Florists are generally not satisfied with substitutes. This perhaps partially explains the presence of a large number of wholesale establishments, with their different mixes of flowers and allied products, in a city of even moderate size.



## Elasticities and Flexibilities of Demand

### Theory and Discussion

Both elasticities and flexibilities are ratios, ratios comparing the relative change of one economic variable with the relative change of another economic variable, *ceteris paribus* (i.e., all other things remaining equal). The price elasticity of demand, for instance, compares the responsiveness of a change in the quantity demanded with a change in the relative price of a commodity. The income elasticity (of demand) would compare the change in quantity demanded with a change in income, while a cross-price elasticity (of demand) would compare a change in quantity demanded with a change in the price of another commodity, where this other commodity is often considered (though not limited to) a substitute or a complementary good [Henderson and Quandt, 1971]. (Hence, there are an infinite number of cross-price elasticities of demand which are theoretically possible, although there are usually very few that would be of interest.)

Price flexibilities, on the other hand, measure an opposite causative reaction. Many perishable products, such as fresh fish, have a quantity supplied to the marketplace which is really not primarily determined by market interaction but by other factors (e.g., the day's catch or harvest). Hence, the supply is considered fixed, or at least determined outside of the marketplace, itself. These products then move at a market-clearing price based on the amount brought to market. The price has little influence on the level of production, at least in the current period. (Price may have a small influence on the level of imports and exports and, in some production periods, on the

quantity harvested.) The price flexibility coefficient then represents the percentage change in price associated with a percentage change in quantity, *ceteris paribus* [Tomek and Robinson, 1972].

As with fresh fish, the supply of fresh cut flowers can be considered fixed. Output cannot be materially affected in the short run, i.e., on an industry-wide basis. Furthermore, fresh cut flowers can definitely be considered a perishable product. Although technologies for cut flower storage do exist, they are not widely adopted due to their high cost. The response to current storage methodologies can be measured in days.

Elasticities and flexibilities are related. Under some conditions, the price flexibility coefficient,

$$F = \frac{\text{the change in } P}{\text{the change in } Q} \cdot \frac{Q}{P},$$

where P represents price and Q represents quantity, may approximate the reciprocal of the price elasticity of demand. However, in cases where a product has substitutes, i.e., if significant cross-price effects do exist, then the reciprocal of the price flexibility of demand only serves as a lower limit for the elasticity, i.e.,

$$\left| \frac{1}{F} \right| \leq \left| E_p \right|.$$

Furthermore, a market which reacts with a relatively large change in price when a small change occurs in the quantity supplied, i.e., a market displaying a flexible price coefficient ( $F < -1$ ), is normally associated with an inflexible price coefficient, i.e.,  $0 > F > -1$ .

Here, small changes in quantity supplied usually have a relatively smaller impact on price [Tomek and Robertson, 1972].

A major point of consideration when beginning a discussion on elasticities and flexibilities of a product is the necessity of defining exactly what product is being discussed. Flowers themselves, for instance, probably have an entirely different price elasticity of demand than do flower arrangements. For the most part, these products are consumed by different people, at different times and in different marketplaces. Therefore, one should perhaps consider wholesale price elasticities for cut flowers and retail price elasticities for flower arrangements. (Although there are now increasing opportunities for consumers to buy cut flowers, bunches, bouquets, etc., especially with street vendors and mass market outlets, the vast majority of cut flowers are still purchased as part of flower arrangements at retail florist shops [The Floral Index, 1979, 1980].) Furthermore, one should remember that these consist of two very different commodity groups, with the latter, flower arrangements, being composed of service to a greater extent than cut flowers. One further complication may be to consider cut flowers as a group. Here, cut flowers would be considered a very important input (group) for florists, indeed, something they could hardly do without. Alternatively, cut flowers, considered as individual species, allow for greater flexibility of use in the flower shop.

There are several product characteristics which commodities may possess which suggest various elasticities. As with most product groups, however, cut flowers and flower arrangements each exhibit certain attributes which would favor finding the measurement of elasticity being relatively elastic; other features would suggest an

inelastic reading to be a more appropriate finding. Luxury items, for instance, are normally thought of as being relatively elastic, while essential goods are typically considered inelastic [Goodwin, 1977]. One might argue that flower arrangements are luxuries; yet, many occasions call for at least some flowers, hence implying imperative purchases. Flower arrangements could be considered, for instance, an added extra for a dinner party. On the other hand, few first-time brides have even considered the possibility of a flowerless wedding. Yet, much substitution can exist between various species for even these "imperative" uses.

At wholesale, the confusion persists. Some flower species might be considered a luxury for a florist's inventory, while other "bread-and-butter" varieties are deemed truly essential. Few florists, for instance, carry *Cypripedium* orchids on a regular basis. Yet, few florists will find themselves without carnations and pompon chrysanthemums in regular stock. Flowers, as a group, however, must be considered an essential input for a flower shop operator.

Another "deciding attribute" which becomes almost as perplexing when considering flowers and flower arrangements is that of substitutability. Products with many substitutes are often considered elastic. If the price rises, quantities sold rapidly decline as people purchase substitute commodities. Goods with few good substitutes are considered to be relatively more inelastic, as consumers find few alternative commodities to "flee to" when prices rise [Goodwin, 1977]. Hence, to a certain degree, florists could substitute among various individual species if prices get too high for specific varieties. It is only when quantities are needed for the consumer that requests specific flower types that such substitution would not be possible.

However, florists would have difficulty finding a substitute input for cut flowers as a group.

At retail, flower arrangements make up the bulk of cut flower sales. Here, there are some occasions for which consumers could find alternatives to flower arrangement purchases. Witness the bottle of wine, box of candy or contributions to favorite charities which are often given in lieu of flowers. Yet, for certain specific occasions, such substitutes would definitely be out of place, e.g., a wedding. The "clues" given thus far, as predicted, leave the elasticity questions still somewhat unresolved, although a pattern may be emerging.

Another characteristic often cited involves the fraction of the budget devoted to the product or product group. Products are often thought to be more elastic in nature, the larger the part of the budget that they represent [Goodwin, 1977]. Flowers do make up a considerable part of the florists' budget, hence suggesting an elastic measurement. Amounts spent on each individual species, however, are of course less. For most consumers, however, flower arrangement purchases represent a very small part of overall allocations, even if arrangements are purchased on a regular basis. This might suggest that flower arrangements represent a more inelastic commodity (at retail).

One observation worth noting is that, even when flowers are called for, almost as a necessity, the amount spent for such an arrangement is not preset in the consumer's mind. Hence, even though the option of not giving a flower arrangement may not exist, the amount spent for such a gift, although a small part of the budget, still might include a fair amount of flexibility. Some decision making on the part of the consumer may still be required. In times when the economy is depressed,

then, consumers may further restrict their flower budgets; during expansionary economic times, flower dollars may be somewhat more free flowing.

Another elasticity differentiating commodity characteristic involves the time period for purchase. Goods with purchase decisions which allow for longer periods of time tend to be more elastic in nature, while those permitting only short time periods suggest inelasticity [Goodwin, 1977]. The perishability of flowers might suggest that both flower and flower arrangement purchases are considered in the very short run. While generally true, there does exist some leeway at both wholesale and retail that can lengthen the time period for purchase decision making. Retail consumers can order flower arrangements far in advance for specific occasions such as weddings or banquets. Funeral flower purchase decisions, however, are usually quite sudden. At wholesale, sudden needs can also occur, but with enough advance warning, wholesalers can usually satisfy needs for even the most specific species, varieties or colors, even if the flowers must be imported. With an even longer time horizon, an entire flower crop could be planned and grown for highly specific needs. Hence, one might suggest that the potential for lengthened purchase time horizons is greater at wholesale (for flowers) than at retail (for flower arrangements). Whether the elasticities of flowers as a group, of individual species or of flower arrangements have yet been determined (or even suggested) is debatable.

One final area to examine to try to ascertain theoretically appropriate elasticity measurements is society's habits or cultural mores. A lessening of cultural mores usually suggests a more elastic

product than exists when habits are ingrained [Goodwin, 1977]. If florists persist in inventorying various unusual species [Joseph, 1981], cut flowers may, as a group, become more elastic or price sensitive than if florists adhere to traditions of purchasing only roses, carnations, chrysanthemums and an occasional gladiolus. Furthermore, a diminishing of consumer purchasing habits may suggest that flower arrangement purchases which involve specific species, may become somewhat more elastic. As a result, the flowers used as inputs may tend to become more elastic as well.

Witness florists' efforts at moving consumers away from strictly red colored flowers at Valentine's Day and Christmas and away from only rose use at Valentine's Day. The Florists' Transworld Delivery Association's featured Valentine's Day arrangement, for example, has purposely omitted the use of roses for many years. It has also attempted to incorporate pink and white colored flowers in the arrangements. Hence, florists may not be purchasing strictly red roses for Valentine's Day for their inventories either, at least to the extent done previously.

On the other hand, cultural mores on the giving of flowers may be changing, making flower giving much more important. If flower use in the U.S. becomes an everyday occurrence, as is being urged, retail consumers' flowers, whether in arrangements or hand-held bouquets, may become a very important habit to Americans. Hence, a move toward a more inelastic measurement of elasticity may occur.

The biggest discovery from this presentation of product characteristic is that there does exist room for debate on appropriate findings for cut flower industry elasticities. Perhaps almost any elasticity

conclusions could be supported. There does exist some evidence that the elasticities of demand for flowers and for floral arrangements may be shifting. Some support has been generated for findings that individual flower species are somewhat more elastic than the commodity group of cut flowers as a whole, for florist shop operators. Evidence might also exist to suggest that cut flower arrangements, especially when considered for specific occasions, might be somewhat more inelastic in nature.

Another consideration in any flower elasticity discussion should include the differences, if any, between mass market sales and those of the traditional retail florists. Although mass market sales account for only a small portion of fresh flower sales [The Floral Index, Inc., 1979, 1980], this proportion is on the rise. It is also important to note that mass market cut flower sales usually differ drastically from those of the traditional retail florist in that they generally lack much of the service component. Although this is changing in some areas, mass market sales are typically comprised of just cut flowers (see Lavagetto [1982]). At the same time, many traditional retailers are adopting cut flower sales as opposed to cut flower arrangement sales, for a significant portion of their sales. Still the vast majority of traditional retail florists' sales are for specific occasion-oriented arrangements, where floral-giving habits may play an important role and where few good substitutes may exist. Mass market sales, on the other hand, have been typically non-occasion oriented. Although this difference in sales and sales outlets may be disappearing, there is currently reason to suggest that traditional retail florist sales may be more inelastic in nature than cut flower sales in the mass market. (As historical mass market



data are lacking and as mass market cut flower sales represent such a small portion of the total (less than 10 percent in most months [The Floral Index, Inc., 1979, 1980]), these differences, although herein recognized, will be ignored for the mathematical analysis to follow.)

#### A Hedonistic Aside

An argument can certainly be made that consumers buy flowers because consumers are, consciously or unconsciously, satisfying a need or because of some certain pleasure imparted by the purchase. That is to say, consumers buy flowers because they are hedonistic. Pleasures obtained may derive from the flowers themselves or from the actual purchase act. Kelvin Lancaster [1966] and Gary Becker [1965] are two economists who have furthered the field of hedonistic economic theory.

Lancaster [1966] suggests that people use products because of their characteristics. When alternative products are evaluated, the characteristics of the products and the pleasures or utility received from various products need to be considered. Furthermore, Lancaster insists, the simplest consumption activity for a single good involves an evaluation of more than one characteristic. Thus, he concludes, the personal element of consumer choice is between collections of characteristics of various goods.

Becker [1965] speaks of the "revised theory of choice." In his theory, the consumer considers "revised goods" which combine time (considerations) with market goods to evaluate pleasure. Time has a cost. Time is needed in consumption, and time, therefore, plays a big role in determining convenience (or time efficiency) in the marketplace.

Triplett [1976] enlarges on this concept by discussing psychic utility and packaging. Triplett suggests that the number of varieties of a market good cannot exceed the number of characteristics that the good has, unless the fact that all people do not have identical tastes is first acknowledged. Hence, there is either a variation in tastes or more than one (group of) characteristic(s) is involved.

Thus, a hedonistic approach to flower consumption might insist upon the recognition that flower arrangements are bundles of characteristics. These bundles, due to varying personal tastes, come in numerous varieties and include not only flowers, but much more. They may include characteristics of goods such as color or smell, which different people may react to in different ways, as well as attributes relating to stem lengths, floral species used, various stages of maturation, aspects of quality, numbers of flowers and more. Furthermore, depending on the occasion (and, perhaps, the attached card), flower arrangements may include characteristics denoting sympathy or congratulations, wishes of good luck or get well, or thoughts of happy holiday or *bon voyage*! Time considerations are also included in the bundle of goods. Time may be represented by factors such as the timeliness of the occasion or duration of the wish--perhaps, due to freshness of the flowers--and even time for purchase, i.e., convenience in ordering by phone, delivery and ability to pay for the flowers by mail. In some cases, having the flowers arranged by a designer may even be saving the purchasers time (by not having to do the designing themselves).

It may be argued, then, that deriving demand elasticities for such a complex product is futile, for it may even be impossible to describe the product adequately. This may be even more true for flower

arrangements than for most products, as creative design abilities and nature's own creations certainly vary with each flower arrangement. Hedonistic approaches, by their very nature, may preclude elasticity calculations, or at least, relegate any elasticities measured to the domain of being almost useless, as they are calculated based on a very narrowly defined product with exceedingly few observations made. While this does not refute hedonistic approaches, adherence to these theories does not satisfy theoretical curiosities as to what elasticities may be, should the product at least be definable. Therefore, a return to the less hedonistic theoretical world may be warranted. It should be remembered, however, that it, too, represents only an alternative theoretical approach.

#### Cut Flower Demand: A Two-Tiered Approach

Arguments made in the previous discourse on substitutes suggested that, for the most part, florists make decisions as to what flower species customers receive in their arrangements. While it is admittedly not true in all instances, florists do tend to select flowers for their customers, whether based on availability, prices, degree of freshness of possible selections, intended use, personal taste of the designer, etc. Hence, for the majority of occasions, various species are somewhat substitutable at retail. Furthermore, arrangements often contain several different species. Therefore, it is suggested that an appropriate approach may be to examine retail cut flower arrangement demand, rather than retail demand for various species.

Florists, on the other hand, do demand various species. Such demand is derived from the retailer's needs during most time periods.

Yet, because of the relative ease of obtaining various species, florists may actually exhibit distinguishable demands for one species or another, as long as some minimum numbers of "feature flowers" and "filler flowers" are inventoried. Such demands may indeed be true price-quantity interactions, allowing florists to vary their purchases based on fluctuating price levels. Hence, an examination of the demands for individual species may be appropriate at the wholesale level.

Another point to be made is that florists can essentially not do without some flowers (as a group). While the need for fresh cut flowers might be questioned (there are some shops that carry only dried, silk or other artificial flowers), for the most part, cut flowers, as a group, can theoretically be considered an essential input for florists. Hence, the average florist's demand for flowers as a group must be considered highly inelastic.

There are some specific occasions where use of flower arrangements at retail is almost always assured as well. While flower use for these occasions is not as assured as flower use by florists, habits and cultural mores almost dictate that some kind of floral expression will be made. Such occasions, which might include weddings (especially for first time brides), funerals (although this is fluctuating with the occurrence of "Please Omit"'s) or other occasions particular to some cultures or heritages, might also necessitate the finding of a virtually perfectly inelastic demand as well, for that specific type of event. Here, however, because of the changes in cultural mores, there might be some slope to the event-specific demand curve (i.e., the elasticity measurement may not be exactly equal to zero).

Hence, in this analysis, the two areas where investigation will be conducted are for general retail cut flower arrangements demand and for species-specific cut flower demand at the wholesale level.

Data sources and limitations. Unfortunately, data limitations to this approach require several assumptions. At retail, it should be noted, consumers purchase more than just flowers in their flower arrangements. Service is the biggest input into an arrangement. This service, which consists of design skills of the florist, acquiring and storage of flowers for sale and, in some cases, delivery, transmission of orders, credit, etc., is often accompanied by other materials (a container, floral foam, wires, a greeting card, ribbons, etc.), as well as the flowers.

The data source for flower arrangements is from an adaptation of data found in Business Cycle Relationships for Commercial Floriculture for the United States: 1929-1979 by M. Truman Fossum. Fossum [1979] includes a table on sales of retail florists for selected years, as well as a table on the average value of Florists' Transworld Delivery Association (FTD) wire service orders over time (Appendix C, Table C-1). It was assumed, for this analysis, that the average FTD outgoing order value represented, at least with some consistency, the average value of all floral arrangements. This may not be true because of the minimum order values which have been established by many wire services or member florists. Such minimums may tend to inflate the value of wire service orders relative to the value of non-wire service business. Yet, it will be assumed that any effect which this may have is somewhat consistent over time.

It was also assumed that all retail florist business was cut flower arrangement business. While this assumption is knowingly incorrect, it does allow for the analysis to continue. (It was established earlier that between 46 percent and 52 percent of 1975 FTD members' business was for sales of arranged fresh flowers and that another 5 percent to 9 percent of business was for sales of unarranged fresh flowers, depending on location and structure of the business in question [FTD, 1977].) Unfortunately, similar data do not exist over time. Hence, it will be assumed, for this analysis, that the proportion of total retail florists' business that consisted of cut flower arrangements remained a constant over time. It is hoped that various fads, such as plastic flowers of the 1950s and 1960s, green plants of the 1970s and the surge in dried and silk arrangements of the late 1970s and early 1980s have more or less balanced each other out, leaving the proportion of sales attributable to cut flower arrangements essentially constant. This may also be incorrect, but it becomes a necessary assumption.

Hence, an average value of cut flower arrangements is suggested by the average wire service order value. An average number of flower arrangements is then generated by dividing total sales by average arrangement value. These assumptions thus allow the retail demand analysis to continue.

At the wholesale level, a USDA data series, entitled Floriculture Crops, has listed sales, in units and dollars, and average prices for the major cut flower species (standard and miniature/spray carnations, hybrid tea and sweetheart/miniature roses, gladioli, standard and pompon chrysanthemums) over time. These data correspond to that found in Tables 4-1, 4-2 and 4-4. In addition, beginning with 1971, the USDA

Market News Service began publishing species-specific import listings. These figures have been combined with domestic production figures to yield availability totals for the major species. It was assumed that imported flowers, for any one species, did not drastically affect domestic supply prior to the 1971 data. Tables 4-10 through 4-13 (corresponding to the data source) tend to confirm this, in the broadest sense.

One of the limitations of the import data, however, is that price data are not tabulated and released. Hence, it is impossible to generate true quantity-price relationships for imports. Both imports and domestic production were considered of equal value at the wholesale level, with that value originating from the USDA domestic data. This is not a too unrealistic assumption, as economic theory suggests that for homogeneous products under perfectly competitive conditions, prices of products from different sources will necessarily equalize, so that all producers remain competitive [Tomek and Robinson, 1972]. Furthermore, the valuation of imported produce at equivalent domestic product rates has been adopted in previous studies (e.g., Burket [1977]).

Other data from the U.S. Bureau of the Census were used as needed for population figures and for various indices (Current Population Estimates--Series P25 and Statistical Abstracts of the United States). The USDA provided data from the U.S. Department of Labor, Bureau of Labor Statistics, which were used to deflate prices where appropriate, i.e., the Consumer Price Index and the Producer Price Index, and from the Department of Commerce, i.e., real and deflated (personal consumption expenditures price deflator) per capita income

(Working Data for Demand Analysis). These data appear in Appendix C, Table C-1.

Using these data sources then, the elasticity analysis of the retail cut flower arrangement demand and the elasticity (flexibility) analyses of wholesale cut flower demand for the major species were conducted.

Retail cut flower arrangement demand. Tables 5-6 through 5-9 showed movements, over recent years, of U.S. births, marriages, hospitalization and deaths. Table 5-1 confirmed that these indeed are issues of importance for the retail florist. Although the proportion seems to be declining, due to a decreasing importance of funeral arrangements, these four occasions (as a group) accounted for between 64.7 percent and 74.0 percent of total retail florists' business for the years surveyed in the table.

As retail florists' operations are so highly occasion oriented, it is hypothesized that the demand for cut flower arrangements at retail is highly inelastic. Indeed, this has been suggested previously by others [Mitchell, 1980; Sullivan et al., 1980]. Such a finding would be consistent with a product that has few good substitutes, was more (often) a necessity than a luxury, consumes only small parts of the consumer's budget, usually involves short periods of time for purchase decisions and is largely habit or culture oriented.

It should be noted, however, that if industry efforts are successful in luring consumers to purchase substantial numbers of flowers for non-occasions, or if mass marketers succeed in making regular floral customers out of their patrons, then a hypothesis for inelastic demand



may become less valid. Food budgets may, for instance, become an important variable for estimating flower purchases if the majority of flower consumption opportunities are presented to people while they shop for groceries in supermarkets.

Another factor of importance is per capita income. Income directly affects purchases of (almost) all commodities. Not only does income affect luxury buying, but it also may account for the level of consumption of "necessity purchases" made for ritualistic reasons. Indeed, one plausible hypothesis is that for even the most inelastic demand, consumers buy a grade or size of a commodity somewhat consistent with the current level of their disposable income. Under this assumption, one could hypothesize that consumers do not change their flower purchase decisions based on flower prices; instead, consumers may only modify the price level or size of arrangement that they wish to buy. Individual unit sales will not be affected by such considerations, as sales are still recorded, although perhaps at a different price. (Similar hypotheses exist for many commodities. During depressed economic times, consumers are thought readily to substitute hamburger purchases for steak purchases, repairs on older vehicles for purchases of new cars and eating at home for restaurant meals. In the above cases, the numbers of beef sales, transportation services used and meals eaten may not materially change, although expenditures for each may decline.)

Thus, several regressions were estimated in an attempt to ascertain (retail) cut flower demand elasticities. In initial investigations, various regressions were performed to try and find relationships which would be helpful in succeeding stages of the estimation process. Regressing the number of, or dollar sales of, flower arrangements

against birth rates, marriage rates, hospital admission rates and/or death rates proved almost fruitless. All rates moved in similar patterns (although some in opposite directions) over time and were hence interrelated. Attempts were even made to index each rate in terms of its 1958 value. These too were so interrelated (Figure 5-1) that attempts to use these as regressors still resulted in high multicollinearity in the models. Both the number of units and sales data showed high correlations with the Consumer Price Index, however. Time was used in later stages of the estimation to try to capture all of these influences in one term.

Price-quantity relationships were used in the next stage of the estimation process as the number of units per thousand persons of population (to eliminate changing population effects) was regressed against the deflated average flower arrangement price and time. Models estimated, in linear, log and inverse (of time) forms, all proved unsatisfactory, as signs on the parameter estimates were incorrect. Simultaneous systems of equations were also tried; results indicated that there was nothing to suggest these were appropriate.

A group of models was also estimated on a reduced data set which included only a continuous time series. (Previous models used partially continuous, with some discontinuous, observations.) A model regressing the number of flower arrangements per thousand persons against the deflated average price of flower arrangements, time and time-squared had theoretically appropriate signs. However, the model displayed parameter estimates which were not considered statistically different from zero.

The final model selected was run on the complete data set and showed promise theoretically. This model had the number of flower

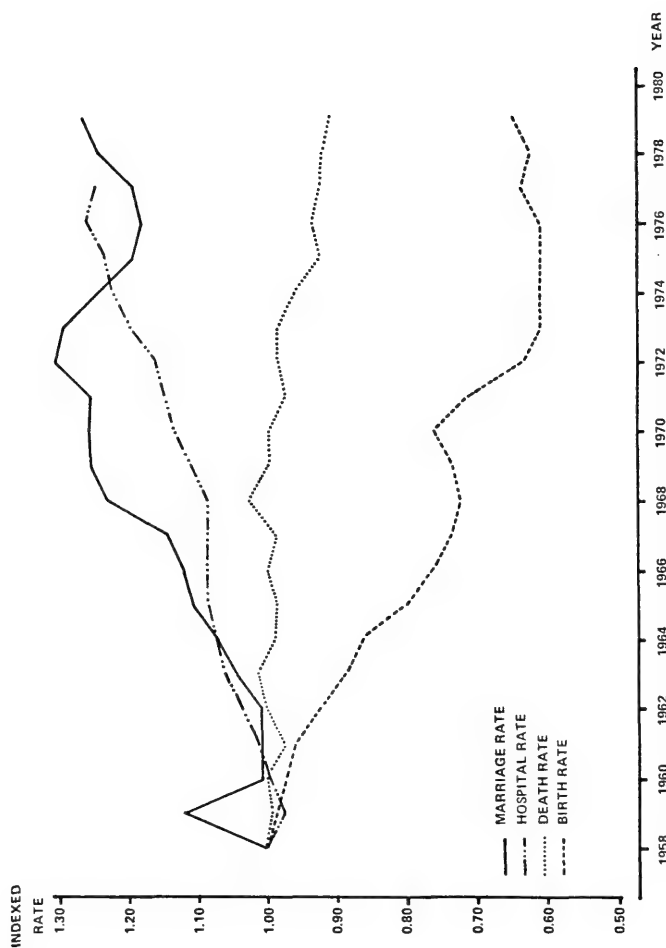


Figure 5-1. Plots of Death Rate, Hospitalization Rate, Marriage Rate and Birth Rate, Per 1,000 Population, 1958 to 1979 (1958 = 1.00)

arrangements per thousand persons regressed against the deflated average price of flower arrangements and the inverse of time. Regression results indicated a strong relationship between the number of flower arrangements per thousand persons and the inverse of time (used as the last two digits of the year, e.g., 1971 was used as 71). Yet, there was no evidence of there being a price relationship with the number of units sold per thousand persons. (There is little statistical confidence that this price parameter estimate is different from zero.) Nevertheless, this model displayed appropriate signs, and when plotted with estimated past and future values, this model exhibits realistic results. Furthermore, the elasticity, when calculated at the mean price and mean quantity, yields a highly inelastic measurement. Results of this estimation are as follows:<sup>1</sup>

$$\begin{aligned}\hat{Q} &= 1340.982 - 14.896 (P) - 42309.80 (1/YR) \\ &\quad (179.194) \quad (20.316) \quad (4945.63) \\ R^2 &= 0.90 \quad MSE = 422.644 \quad F = 41.47 \quad n = 12,\end{aligned}$$

where

$\hat{Q}$  = estimated number of flower arrangements per thousand persons population

P = deflated average price of flower arrangements

YR = year, expressed as its last two digits.

The parameter estimate for the deflated average price of flower arrangements did not test significantly different from zero at the

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<sup>1</sup>All model results will be presented with the estimated standard errors in parentheses under each parameter estimate, the coefficient of determination ( $R^2$ ), the mean square error (MSE), the F-statistic and the number of observations used in the data set (n).

$\alpha = 0.1$  level of confidence. The Durbin-Watson statistic was not provided due to the discontinuous and annual nature of the data.

Plotting the results using estimated parameter values, shows that the number of units consumed will continue to increase with time (Figure 5-2). This increase is, however, predicted to continue increasing at a decreasing rate over time. The decreasing space between demand curves for equal time period extensions illustrates this in Figure 5-2. Furthermore, the rate of increase does not appear to vary materially at different price levels, although as would be consistent with economic theory, higher unit sales are predicted at lower prices (Figure 5-3).

It should again be noted that the price relationships depicted assume flower arrangements to represent a constant proportion of total sales. This may not be true. Furthermore, due to the uncertain price-quantity relationship, there is not much confidence in the actual slope of the curves as depicted in Figures 5-2 and 5-3, i.e., as they might suggest slopes of demand curves.

Wholesale cut flower demand--introduction. For the analyses of the wholesale price elasticities of demand of the various species, several different models were estimated on standard and miniature/spray carnations, standard and pompon chrysanthemums, sweetheart/miniature and hybrid tea roses and gladioli. The data for these seven "species-specific" groups of models came from the USDA series Floriculture Crops and from USDA Market News import data. Domestic production and import data were combined to yield total cut flowers available. Domestic average prices were used for flower price. U.S. Bureau of the Census data were used to provide other information such as population

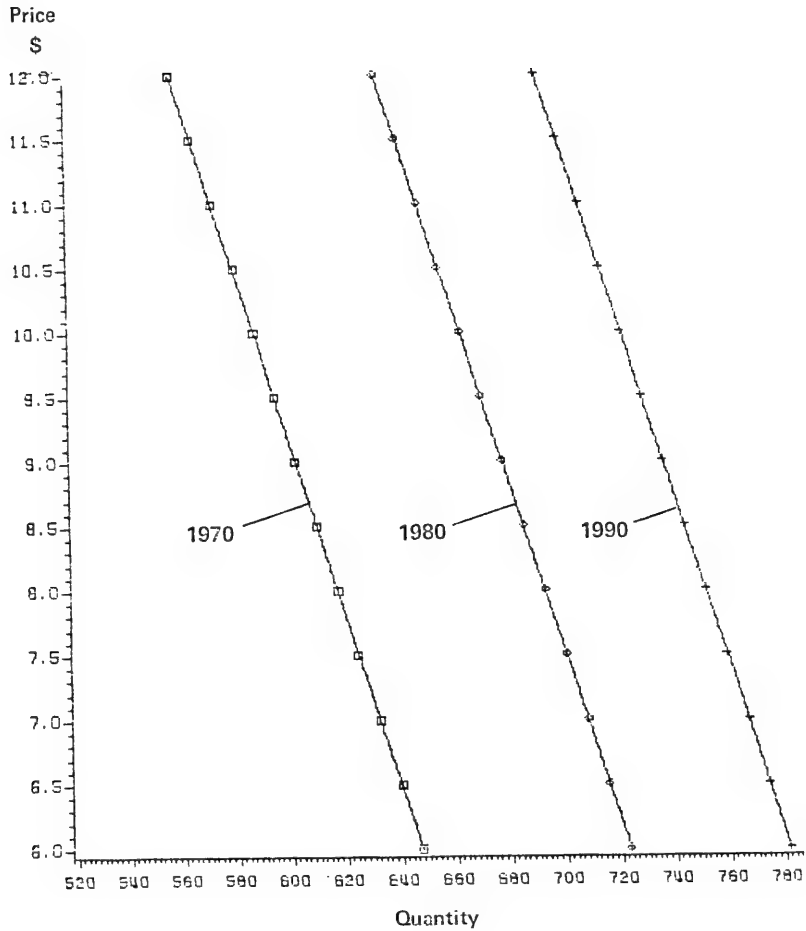


Figure 5-2. Estimates of (Real Price) Demand Per 1,000 Persons for Cut Flower Arrangements Over Time

Quantity

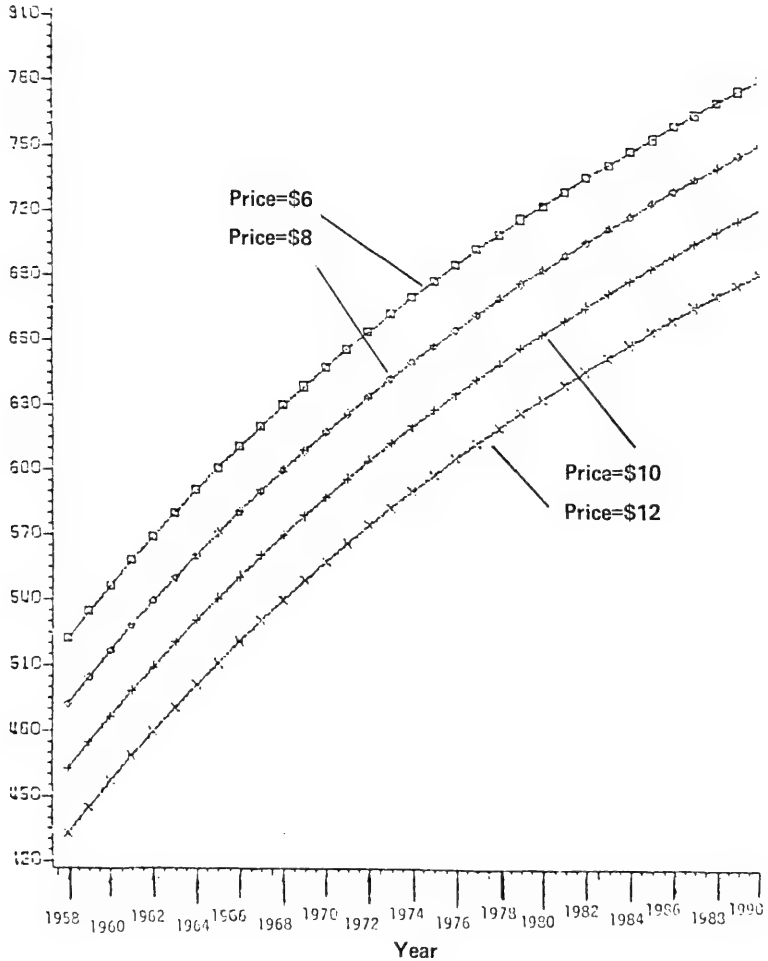


Figure 5-3. Estimates of Quantities Purchased Per 1,000 Persons for Various Real Price Levels of Cut Flower Arrangements Over Time

(to develop production figures on a per capita basis). U.S. Department of Labor figures were used to deflate prices and U.S. Department of Commerce data provided per capita income statistics.

A decision was made to use the USDA data only for years from 1966 to the present for most species. Prior to 1966, the data collection procedures of the Department of Agriculture were somewhat varied, as the number of states surveyed fluctuated in the first years of the data series. It was not until 1966 that the USDA "settled" on a number of states (23) to be included regularly in the survey. These 23 states were surveyed until 1973; in 1974, production results of only 22 states were included in the report. The USDA began reporting "geographic coverage for each crop . . . [including] only major producing states" of the 28 states surveyed in 1975. While this too created some consternation as to the future reliability of the consistency of the summary, these results do provide the only data source for such numbers.

There were exceptions to using data from only 1966 forward. One was for gladiolus production. The vast majority of U.S. cut gladiolus production has always been centered in Florida and California. As these two states were included in even the first years of gladiolus production reports, it was decided that the models involving gladioli could reliably use the data series beginning with the year 1956.

Two other species, miniature/spray carnations and sweetheart/miniature roses, used slightly different data sets. These flowers were not reported separately until 1968. For these two species, then, data used were for the years 1968 forward.

Cut flower supply is assumed to be perfectly inelastic. Flowers must be harvested within a relatively short time span (unlike many other



agricultural commodities, e.g., citrus, agronomic crops, livestock, etc.). Storage for periods exceeding a few days, although possible, is rare due to the high cost involved relative to the returns. With short-term storage, flowers remain extremely perishable. Furthermore, there is reason to believe that supplies cannot be significantly altered in the short run (within a year) on an industry level. Technologies to spur output considerably take some time to acquire and implement for most species. (Financing alone may slow the adoption process.) Risk may be a great inhibitor as well.

Imports may provide the exception to a fixed supply level, especially if the U.S. market acts as only one of several alternative outlets for exporting countries. However, over the span of the data used, U.S. cut flower imports fail to provide convincing contradiction to the arguments for a perfectly inelastic supply. First, imports did not provide significant contributions to domestic supply over much of the data range. (Tables 4-9 through 4-13 show that imports did not reach notable levels for many species until the mid-1970s; the data set commenced during the 1960s for most of the species studied.) In some cases, imports still had not reached sizeable levels by the end of the data range. Secondly, Colombia was the country of record for imported product, accounting for about 90 percent of all U.S. cut flower imports during the late 1970s (Table 4-23). Although Colombia has more recently developed some market alternatives in Europe and elsewhere, during the period of the data range (and even today) the U.S. represented Colombia's prime export market. Staby and Robertson [1982] reported that, as late as 1982, about 70 percent of Colombia's flower exports still were shipped to the U.S. The U.S. is much closer to Colombia than

is Europe. European market alternatives were not as developed during earlier years as they are today, and transportation problems still plague operators wishing to ship to Europe. Hence, it is assumed that the U.S. was the undisputed outlet for the significant share of that which was exported. Finally, the U.S. is still the only outlet for most of Colombia's exports during much of the year, as the European alternative becomes non-existent during the annual summer embargoes implemented by the European Economic Community. Thus, even with the effects of imports, it can be assumed that supply is relatively, if not absolutely, fixed for this data range. Whether the same assumption can be supported in the future is in doubt. The data used were annual; hence, the above arguments support the assumption of a perfectly inelastic supply, thus leading to the use of price dependent models, i.e., price flexibility models.

Due to the assumption of perfectly inelastic supply, estimating flexibilities was the aim of the procedures used. Various models were estimated for the different species, with the model yielding the theoretical and/or statistical best fit varying with the species. In all cases, nominal prices and real prices were tried as regressands. Regressors examined in various combinations included domestic, imported and total volumes (each checked in both absolute and per capita measurements), fraction of total volume accounted for by domestic production and deflated (using the personal consumption expenditures price deflator (1972 = 100)) per capita income.

Although some species might regularly substitute for others in their use by florists, no cross effects were considered for the modeling process. This decision was based on the facts that there was a

limited data series and, hence, a limit on the degrees of freedom available, and that adequate consideration of substitution effects might well involve the use of all other species. As there is no "all other flowers" variable available, this could not be done. It should be noted that this will lead to biased results if a correlation between certain species exists as substitute goods.

Estimation using per capital figures proved generally unsatisfactory. While some flower species' per capita models yielded theoretically adequate parameter estimates, these models were not as satisfactory as models examined using absolute volume numbers. Other per capita estimations proved very unsatisfactory.

Models were estimated in linear and logarithmic forms. Although the perfectly inelastic supply assumption suggests otherwise, simultaneous systems of equations were estimated to check for possible supply (rather than demand) relationships; without exception, no apparent relationships were evident for the data series used. Results of the linear and logarithmic forms of the models appear (in total) in Appendix C, Table C-2. The results of the most satisfactory model(s) are discussed in the text.

Wholesale standard carnation demand. Estimating flexibilities for standard carnations was not an atypical example of the process used. Models regressing either average nominal price (NP) or average real price (RP) in cents per bloom against (a) total volume (TV) and deflated per capita income (DI); (b) domestic volume (DV), imported volume (IV) and deflated per capita income; (c) domestic volume, percentage of total flower supply accounted for by domestic production (DVPT) and deflated

per capita income and (d) total volume, percentage of total flower supply accounted for by domestic production and deflated per capita income, were estimated.

Estimating models using nominal price and deflated per capita income might cause some readers to feel uneasy. Yet, results proved quite satisfactory. It is hypothesized that deflated income, in such a model, might better be considered a gauge of the state of the economy rather than simply an income variable. As such, it is felt that, in depressed times, final consumers as a group may not spend as much per arrangement when ordering flowers as they are apt to do in expansionary phases of the economy.

Results of the first model were as follows:

Carnation Model 1:

$$\begin{aligned} \widehat{NP} = & -4.36 - 0.00002 (TV) + 0.0067 (DI) \\ & (1.31) (0.000004) \quad (0.00090) \end{aligned}$$

$$R^2 = 0.89 \quad MSE = 0.22 \quad F = 46.52 \quad n = 15.$$

All parameters tested significantly different from zero at the  $\alpha = 0.01$  confidence level.

Second model estimates yielded a slight improvement statistically. Results were as follows:

Carnation Model 2:

$$\begin{aligned} \widehat{NP} = & 4.19 - 0.000019 (DV) - 0.000012 (IV) + 0.004 (DI) \\ & (2.83) (0.000003) \quad (0.000004) \quad (0.0011) \end{aligned}$$

$$R^2 = 0.94 \quad MSE = 0.12 \quad F = 58.64 \quad n = 15.$$

In this model only the intercept did not test significantly different from zero at the  $\alpha = 0.05$  confidence level.

It is worth noting that increases in domestic volume seem to have a greater effect on price than do imports. This is perhaps surprising in that imports now account for the majority supply. Yet, this foreign dominance is only a recent occurrence, so this does not seem unreasonable. (Models using only data from 1971 to 1980 (the period for which import data exist) yielded unfavorable statistical results.) A test of the hypothesis that these two parameter estimates are equal, i.e.,  $H_0: \beta_i = \beta_j$ , for domestic and imported volume parameters, was conducted as follows:

$$H_0: \beta_i = \beta_j, \text{ i.e., } \beta_i - \beta_j = 0$$

$$H_a: \beta_i - \beta_j \neq 0.$$

The test statistic [Kmenta, 1971] is

$$\left| \frac{\hat{\beta}_i - \hat{\beta}_j}{s_{\hat{\beta}_i - \hat{\beta}_j}} \right| \sim t_{n-k-1}$$

where

$$s_{\hat{\beta}_i - \hat{\beta}_j} = \sqrt{\text{Var}(\beta_i - \beta_j)} = \sqrt{\text{Var}(\beta_i) + \text{Var}(\beta_j) - 2 \text{Cov}(\beta_i, \beta_j)}.$$

For this test, then, the statistic is

$$\left| \frac{-0.000019 - (-0.000012)}{0.0000007} \right| = 10.$$

The table value for  $t_{\alpha=.01, 11} = 2.718$ . Therefore, the null hypothesis is rejected, and it is assumed that the two parameter estimates are indeed different.

Other models were not considered improvements over this second model, but they will be reviewed briefly because of the introductory nature of this discussion. The third model did not provide marked improvements over the second model (i.e., improved  $R^2$  and reduced mean square error only if carried to three decimal places). It was discarded because of the cumbersome nature of the fraction variable (DVPT), which would make calculation of a price flexibility more complex. Other models using nominal price and those models using average real price of standard carnations as the dependent variable generally either displayed incorrect signs for the parameter estimates or were less reliable estimators of the dependent variable than were estimators of these models. One of these models, which will not be investigated further but which did give some reasonable estimation results, however, regressed real price of standard carnations against domestic volume, fraction of total flowers available accounted for by domestic production (DVPT) and deflated per capita income. It, too, was deemed too cumbersome to pursue because of the fraction variable DVPT. (All models are presented in Appendix C, Table C-2.) Hence, a price flexibility of demand will be calculated using the results of the second model above.

The price flexibility of demand for standard carnations would be calculated as

$$F = \frac{\partial P}{\partial Q} \cdot \frac{Q}{P}.$$

For domestic carnations, model 2 gives  $\partial P / \partial Q = -0.000019$ . At the mean quantity (of the data set), then

$$F = \frac{(-0.000019)(540883)}{\hat{NP}}.$$

$\hat{NP}$  is found by substituting the mean imported quantity and the mean deflated per capita income into carnation model 2. This yields  $\hat{NP} = 8.058$  cents per bloom and  $F = -1.28$ . Similarly, at the maximum and minimum levels (found in the data set) for domestic production, *ceteris paribus*,  $F = -1.79$  and  $F = -0.648$ , respectively. Hence, demand for domestic carnations ranges over the data set from a point of flexibility to a point of inflexibility.

Using the same procedure to calculate a range of flexibilities for imported carnations yields  $F = -0.21$  at the mean imported volume observed (using mean domestic production level and mean deflated per capita income). Furthermore,  $F = -0.889$  and  $F = 0$ , at the maximum and minimum carnation import levels (*ceteris paribus*), respectively. It can then be concluded that imported carnations are inflexible over the range of observed data, *ceteris paribus* (other variable values at their means).

One further calculation is probably warranted. According to recent trends in the data (Table 4-10), imported carnation growers are replacing domestic producers as the chief suppliers of carnations in the U.S. Yet, the total volume seems to have stabilized somewhat. As a matter of fact, 1980 saw U.S. supply satisfied by the highest level of imports ever, while domestic producers contributed the lowest level ever (in this reduced data set, i.e., 1966 forward). Hence, if one were to calculate a flexibility for the highest observed import level and the lowest observed domestic volume over the data set, while using the recent high income level, one finds  $F = -0.672$  for domestic carnations and  $F = -0.429$  for imported carnations. One can then conclude that price flexibility coefficients for carnations at the wholesale level, no

matter the source, are inflexible under these assumptions. In terms of elasticities, it can be said that the wholesale purchase decision facing florists for carnations is definitely one of elastic demand--this, since the reciprocal of the flexibility coefficient (which, here, is greater than one) serves as a lower limit for the elasticity, when one is faced with significant cross-price effects (i.e., for substitute commodities).

Wholesale miniature/spray carnation demand. The flexibility analysis for miniature/spray carnations was much more limited. Data restrictions provided the chief limitations. It was not until 1968 that any domestic miniature/spray carnation production was reported separately, data having previously been included as "carnations" along with standard carnation data. (During the first years following the separate reporting, one finds that the difference between the "carnations:all" and "carnations:standard" data listings indicated that the USDA's statisticians accounted for 37 blossoms per bunch of miniature/spray carnations.)

Furthermore, not until the 1981 revision of 1980 Market News import data is any indication presented (in the data) as to miniature/spray carnations having been imported. Final 1980 revised figures show that 5,605 bunches of miniature/spray carnations were imported in this first year of such reporting (over 54 percent from Israel). This, then, would account for nearly 49 percent of the total U.S. supply (i.e., U.S. production plus imports). As it is highly unlikely that, in one year's time, import levels of miniature/spray carnations went from zero to a point of contributing almost half of the total U.S. supply, the extremely limited import data were ignored. An analysis of possible



miniature/spray carnation flexibility coefficients was, therefore, conducted using the limited observations in the domestic production reports. It is realized that these models are misspecified.

This analysis followed the same path as that for standard carnation varieties. However, none of the models involving imports (IV) or fractions of supply accounted for by domestic production (DVPT) makes sense, for obvious reasons. Of the two remaining equations, which regressed (1) nominal price against total (here equal to domestic) volume and deflated per capita income and (2) real price against the same regressors, only the latter model displayed theoretically appropriate signs. This regression analysis yielded

$$\hat{RP} = 0.758 - \frac{0.00014}{(0.6705)} (TV) + \frac{0.00014}{(0.00022)} (DI)$$

$$R^2 = 0.88 \quad MSE = 0.004 \quad F = 35.63 \quad n = 13,$$

where

$\hat{RP}$  = estimated average real price in dollars per bunch,

TV = total volume, here equal to only the domestic volume, and

DI = deflated per capita income.

The estimated intercept coefficient and the estimated income parameter did not test significantly different from zero. The domestic volume parameter tests significant, and it is negative, as would be expected, indicating that increased quantities reduce price.

Using this equation, the price flexibility of demand for (domestic) miniature/spray carnations is

$$F = \frac{(-0.00014)(TV)}{\hat{RP}}.$$

At the mean volume of the observed data set (1968-1980), then,

$$F = \frac{(-0.00014)(3750)}{\widehat{RP}} = \frac{-0.525}{\widehat{RP}}.$$

Using mean deflated per capita income,  $\widehat{RP} = \$0.7883$  per bunch and  $F = -0.666$ . Evaluating the flexibility at the high and low observed volume values of the data set, *ceteris paribus*, yields  $F = -1.664$  and  $F = -0.208$ , respectively. It can be noted that domestic miniature/spray carnation production has trended upward over the observed data set. This, perhaps, would indicate a flexible demand or an inelastic price demand decision facing florists buying miniature/spray carnations at wholesale (if one assumed either no or minimal cross-price effects) during recent years.

Wholesale standard chrysanthemum demand. The standard chrysanthemum model estimation procedure resulted in only one model with theoretically appropriate signs for the parameter estimates. This model yielded the following:

$$\begin{aligned} \widehat{NP} &= 6.237 - 0.000068 (TV) + 0.0063 (DI) \\ &\quad (3.424) \quad (0.000017) \quad (0.00057) \\ R^2 &= 0.92 \quad MSE = 0.84 \quad F = 71.99 \quad n = 15, \end{aligned}$$

where

- $\widehat{NP}$  = estimated nominal price in cents per bloom,
- TV = total flowers available, i.e., domestic production plus imports, and
- DI = deflated per capita income.

In this model, all parameter estimates tested significantly different from zero at the  $\alpha = 0.10$  confidence level. Unfortunately, however,

this model does not differentiate the effect of the source of the flowers on price. Other models, which did distinguish by source, did not yield theoretically consistent results.

Using this model, one can calculate a price flexibility of demand as

$$F = \frac{\partial P}{\partial Q} \cdot \frac{Q}{P},$$

where

$$\frac{\partial P}{\partial Q} = -0.000068.$$

Using the mean quantity for total volume and the mean deflated per capita income yields  $\widehat{NP} = 21.50$  cents per bloom and  $F = -0.453$ . At the high and low values for total volume, *ceteris paribus*,  $F = -0.587$  and  $F = -0.340$ , respectively. In recent years, standard chrysanthemums have been available at some of the lowest supply levels within the data set.

The inflexible flexibility coefficients translate into an elasticity coefficient that is definitely elastic. This means that florists are very sensitive to standard chrysanthemum price changes. This is, perhaps, confirmed by the decline experienced in standard chrysanthemum sales, a decline which has occurred even in the face of declining real prices (Tables 4-3, 4-4 and 4-11).

Wholesale pompon chrysanthemum demand. Analyzing the pompon chrysanthemum data gave better than average results. Three different models yielded somewhat satisfactory results. Remaining models

contained at least one parameter estimate with a theoretically inappropriate sign.

The first satisfactory pompon chrysanthemum model regressed nominal price in dollars per bunch ( $\widehat{NP}$ ) against domestic volume (DV), fraction of total available supply accounted for by domestic production (DVPT), and deflated per capita income (DI). Results were as follows:

$$\begin{aligned}\widehat{NP} &= 0.075 - 0.0000176 (DV) + 0.069 (DVPT) + 0.00034 (DI) \\ &\quad (0.438) (0.0000055) \quad (0.183) \quad (0.00011) \\ R^2 &= 0.94 \quad MSE = 0.00078 \quad F = 54.44 \quad n = 15.\end{aligned}$$

The intercept and the parameter estimate for DVPT did not test significantly different from zero. The insignificance of the DVPT parameter estimate (probability  $> |t|$  at  $\alpha = 0.286$  level) may suggest little influence of imported pompon chrysanthemums on the nominal price, as this is the only variable where imports enter the model. As this is probably unlikely, further analysis of this model is deemed unworthy.

The other two models which will be considered used real price as the regressand. The first of these two models yielded the following:

$$\begin{aligned}\widehat{RP} &= 0.996 - 0.000023 (DV) - 0.000011 (IV) + 0.00014 (DI) \\ &\quad (0.397) (0.000013) \quad (0.000004) \quad (0.00020) \\ R^2 &= 0.90 \quad MSE = 0.0028 \quad F = 34.56 \quad n = 15,\end{aligned}$$

where

- $\widehat{RP}$  = estimated average real price in dollars per bunch,
- DV = domestic production volume,
- IV = imported volume, and
- DI = deflated per capita income.

In this model, the parameter estimate for deflated per capita income did not test significantly different from zero.

The calculation of a flexibility is deferred to the last model which yields a statistically better fit. Yet, the results of a test of the difference of parameter estimates for domestic and imported quantities for this model, i.e.,  $H_0: \beta_{DV} = \beta_{IV}$ , prove interesting. The test results are as follows:

$$H_0: \beta_i = \beta_j, \text{ i.e., } \beta_i - \beta_j = 0$$

$$H_a: \beta_i - \beta_j \neq 0.$$

The test statistic [Kmenta, 1971] is

$$\frac{\hat{\beta}_i - \hat{\beta}_j}{s_{\hat{\beta}_i - \hat{\beta}_j}} \sim t_{n-k-1},$$

where

$$s_{\hat{\beta}_i - \hat{\beta}_j} = \sqrt{\text{Var}(\beta_i - \beta_j)}.$$

The test statistic is

$$\left| \frac{(-0.000023) - (-0.000011)}{0.000003008} \right| = 3.989.$$

The table value for  $t_{\alpha=.01, 11} = 2.718$ . Therefore, the null hypothesis is rejected, and it is assumed that the two parameter estimates are indeed different, i.e., domestically produced and imported pompon chrysanthemums do indeed affect real price differently.

The last pompon chrysanthemum model to be presented yielded the best estimators. Results were as follows:

$$\widehat{RP} = -0.711 - 0.000020 (DV) + 1.109 (DVPT) + 0.000290 (DI) \\ (0.641) (0.0000080) (0.267) (0.00016)$$

$$R^2 = 0.94 \quad MSE = 0.0017 \quad F = 59.39 \quad n = 15,$$

where

$\widehat{RP}$  = estimated average real price in dollars per bunch,

DV = domestic production volume,

DVPT = percentage of total supply accounted for by domestic production, and

DI = deflated per capita income.

Only the intercept did not test significantly different from zero in this model.

Using this last pompon chrysanthemum model, one can calculate a real price flexibility of demand as

$$F = \frac{\partial P}{\partial Q} \cdot \frac{Q}{P}.$$

The derivative,  $\partial P / \partial Q$ , however, is more complicated for this model than previously, because of the DVPT term, which has both domestic production (DV) and imported quantities (IV) embodied in it. For domestically produced pompon chrysanthemums,

$$\frac{\partial P}{\partial Q_{DV}} = -0.00002 + 1.109 [-(DV)(DV + IV)^{-2} + (DV + IV)^{-1}].$$

Rearranging terms and putting the bracketed material over a common denominator yields

$$\frac{\partial P}{\partial Q} = -0.00002 + 1.109 \left[ \frac{DV + IV - DV}{(DV + IV)^2} \right]$$

$$= -0.00002 + 1.109 \left[ \frac{IV}{(DV + IV)^2} \right]$$

For imported quantities,

$$\frac{\partial P}{\partial Q_{IV}} = 1.109 [-(DV)(DV + IV)^{-2}]$$

$$\Rightarrow \frac{\partial P}{\partial Q_{IV}} = \frac{-1.109 (DV)}{(DV - IV)^2}.$$

Using these terms to calculate, first, flexibility for domestically produced pompon chrysanthemums at the mean domestic quantity, the mean fraction of the domestic product over total production available, and the mean deflated per capita income, yields  $\hat{R}P = \$0.646$  per bunch and  $F = -0.716$ . Similar calculations at high and low quantities, *ceteris paribus*, yields  $F = -2.071$  and  $F = -0.553$ , respectively. Hence, domestically produced pompon chrysanthemums display either a flexible or an inflexible price flexibility, i.e., an inelastic or an elastic price elasticity of demand. In recent years, domestic production of pompon chrysanthemums has been close to the mean value over the range of the data, but the import level has been at its highest level over the range. A calculation of the price flexibility using the 1980 data for the quantities, the deflated per capita income and the real price as calculated in the model ( $\hat{R}P = \$0.446$  as compared with  $\hat{R}P = \$0.40$  for 1980) yields  $F = -0.940$ , a barely inflexible level.

Using the same procedures for imported pompon chrysanthemums yields  $\hat{R}P = \$0.646$  per bunch (same as above) and  $F = -0.334$ , at the mean quantities and income. At the high and low quantities, *ceteris paribus*,  $F = -1.193$  and  $F = 0$  for imported pompon chrysanthemums, respectively.

Here, a flexible or an inflexible price flexibility coefficient is again achieved, depending on the data; this implies either an inelastic or an elastic price elasticity of demand for imported pompon chrysanthemums. In 1980, the estimated price flexibility for imported pompon chrysanthemums was  $F = -0.620$  (using the  $\hat{RP} = \$0.446$ ); this is inflexible and suggests that imported pompon chrysanthemums are elastic.

Summarizing, then, one finds that florists can view both domestically produced and imported pompon chrysanthemums either with an inelastic or an elastic wholesale price elasticity of demand. If inelastic, this would imply that florists are less reactive to price changes than if operating in an elastic region of the demand curve. Thus, increasing prices, when florists face an inelastic demand situation, will result in less resistance and subsequent quantity-purchased modifications than when florists operate in the elastic portions of the demand curve.

In 1980, both domestically produced and imported pompon chrysanthemums exhibited inflexible flexibility price coefficients, thus implying elastic demand. However, it is interesting to note that imported pompon chrysanthemums were more inflexible and, hence, more elastic than were domestically produced pompon chrysanthemums. As a matter of fact, the domestically produced flowers were barely inflexible ( $F = -0.94$ ). This may imply that florists exhibit more loyalty, at wholesale, to domestically produced flowers than they do to imported pompon chrysanthemums.

Wholesale gladiolus demand. The gladiolus analysis resulted in only one suitable model. As there were no reports of gladiolus imports until 1980 data were revised, the analysis was limited to considering



only domestic production. (For comparison purposes only, models with import levels equal to zero for all years except for 1980, when import levels equalled less than 0.5 percent of supply, were estimated. However, none of these models had appropriate signs. Rather than bias the data further, the final models estimated kept the import level at zero for 1980 as well. (It should be noted that when the 1980 import level was added to domestic production, and the estimation regressed against total flowers available, the results were not materially altered, but a slight decrease in the goodness of fit of the (same) model was observed.) Hence, models were estimated using total supply as a regressor, where total supply actually equals only the domestic production.) The models were estimated using data from 1956 forward, for reasons listed earlier (there are no 1960 data, however).

Only one of the estimated models examined yielded the theoretically appropriate signs for all parameter estimates. The estimated results were as follows:

$$\begin{array}{rcl} \hat{NP} & = & -1.420 - 0.0000125 (TV) + 0.0033 (DI) \\ & & (1.273) (0.0000026) \quad (0.00023) \end{array}$$

$$R^2 = 0.95 \quad MSE = 0.416 \quad F = 193.55 \quad n = 24,$$

where

$\hat{NP}$  = estimated average nominal price in cents per spike,

TV = total flower volume available, here equal to only the domestic production volume, and

DI = deflated per capita income.

The estimated intercept did not test significantly different from zero at the  $\alpha = 0.10$  level.

The flexibility analysis proceeds, as with other species, with

$$F = \frac{\partial P}{\partial Q} \cdot \frac{Q}{P} = \frac{(-0.0000125) Q}{\widehat{NP}} .$$

At the mean deflated per capita income and mean total volume, one obtains  $\widehat{NP} = 7.054$  cents per spike and  $F = -0.436$ . Substituting in the the high and low quantities of the data range generates  $F = -0.973$  and  $F = -0.272$ , respectively.

The results for the gladiolus analysis indicate that gladiolus demand is inflexible in nature. This translates into an elastic price elasticity of demand being exhibited for this commodity. Price increases, then, would result in a proportionately higher decrease in quantities being purchased.

Wholesale hybrid tea rose demand. Following similar procedures, attempts were made to estimate a price flexibility of demand for roses. The attempts yielded nothing but disappointing results. Every model estimated yielded parameter estimates displaying theoretically inappropriate signs and, often, parameter estimates tested were not significantly different from zero. (These models still appear in Appendix C, Table C-2.) Examining the data, perhaps, suggests why such results were achieved. The hybrid tea rose production data, when restricted to years from 1966 forward, exhibit almost no variability. Production from 1966 to 1980 averages 317,398,000 blooms for domestic production and 325,813,000 blooms for total available supply (i.e., including imports). Yet, domestic production only varies from about 297 to 363 million roses, and the range for total available supply is even less. Such restricted variability of the observed data makes estimating demand

equations very difficult. Even estimating total supply against time yielded a coefficient of determination of  $R^2 = 0.08$  for a linear regression model. The supply is fairly inelastic over the data range. Hence, estimating a flexibility or an elasticity of demand for hybrid tea roses was deemed virtually impossible for this data.

One estimation procedure that did yield some, perhaps meaningful results, was from regressing total hybrid tea rose revenues (price multiplied by total quantities available) against income. These models were estimated in logarithmic form using both real and nominal prices and real and nominal per capita incomes.

Results of regressing the log of real total revenue (LGRTR), i.e., the sum of the log of real price and the log of total flowers available, against the log of the deflated per capita income (LGDI) are the following:

$$\widehat{\text{LGRTR}} = 20.265 - 0.621 (\text{LGDI})$$

$$(1.304) (0.157)$$

$$R^2 = 0.54 \quad \text{MSE} = 0.004 \quad F = 15.58 \quad n = 15.$$

These suggest that real total revenue declines as real per capita income increases, or conversely, as real per capita income increases, rose growers realize fewer real gains. Similar results occur when regressing real total revenue against nominal income and are, therefore, not presented.

When regressing the nominal total revenue (LGNTNTR), i.e., the sum of the log of nominal price and the log of total flowers available, against the log of nominal disposable per capita income (LNINC), however, results are as follows:

$$\widehat{\text{LGNT}} = 9.393 + 0.727 (\text{LNINC}) \\ (0.472) (0.056)$$

$$R^2 = 0.93 \quad \text{MSE} = 0.006 \quad F = 167.82 .$$

This suggests that as nominal disposable per capita income increases, florists spend more, at wholesale, on hybrid tea roses. Regressing nominal total revenue against real per capita income gave similar results.

What can be concluded, therefore, about hybrid tea roses is that as with many other agricultural commodities, although nominal prices may be increasing, producers may be realizing fewer and fewer real gains. As time alone does not contribute to much variation in quantity of roses supplied, it might be suggested that changes in total revenue occur either due to income effects and/or to possible changes in average price caused, perhaps, by changes in tastes and preferences. As imports have generally increased while domestic production has declined over the observed data set, a changing average price due to changes in tastes and preferences of the entire rose mix may have occurred. Less than ideal data, however, preclude drawing any substantive conclusions on this, or on demand price elasticities or price flexibilities.

Wholesale sweetheart/miniature rose demand. The analysis of sweetheart/miniature roses was very similar to that of miniature/spray carnations. Data were limited to 1968 forward, as 1968 was when the first production results were reported. Furthermore, data were limited to domestic production only, as import data still do not include import reports of sweetheart/miniature roses separately. Due to these

limitations, only models using total volume (TV) as regressors, where this is actually equal to only the domestic volume, are appropriate.

Hence, two models were estimated. First, nominal price in cents per bloom (NP) was regressed against total (domestic) volume and deflated per capita income (DI). Results of this estimation are as follows:

$$\hat{NP} = -12.151 - 0.0000887 (TV) + 0.00860 (DI) \\ (5.802) (0.0000419) (0.000858)$$

$$R^2 = 0.91 \quad MSE = 1.216 \quad F = 51.27 \quad n = 13.$$

All parameter estimates tested significantly different from zero at the  $\alpha = 0.10$  confidence level.

Results of a second model regressing real price against the same regressors proved unsatisfactory. Signs on the parameter estimates were not consistent with economic theory, and parameter estimates did not test significantly different from zero.

Hence, working with the first model to calculate a price flexibility coefficient,

$$F = \frac{\partial P}{\partial Q} \cdot \frac{Q}{P},$$

where

$$\frac{\partial P}{\partial Q} = -0.0000887.$$

At the mean quantity and mean deflated per capita income observed over the data range, this yields  $\hat{NP} = 12.46$  cents per bloom and  $F = -0.829$ . At the observed high and low quantities, *ceteris paribus*, similar calculations reveal  $F = -1.027$  at the high quantity and  $F = -0.626$  at

the low quantity observed over the data set. Thus, the price flexibility ranges from flexible to inflexible over the data set, implying the possible existence of either an inelastic or an elastic price elasticity of demand. Using observed 1980 values for deflated per capita income and domestic quantity produced yields  $\hat{NP} = 17.12$  and  $F = -0.586$ .

As the inverse of the flexibility serves as a lower limit for an elasticity measurement in the presence of substitutes, one is almost assured of domestically produced sweetheart/miniature roses being an elastic commodity. (At the highest quantity observed over the data set  $F = -1.027$ , implying a price elasticity of demand of at least 0.97 in absolute value.) Hence, florists will, on average, readily substitute away from sweetheart/miniature roses when prices rise.

Summary of wholesale cut flower demand. In summary, then, one finds that, for many of the cut flower species examined, both flexible and inflexible price flexibility coefficients have been found over the observed range of the data (Table 5-10). For other species, only inflexible price flexibility coefficients have been exhibited over the data set. Yet, for all of the species, except domestically produced standard carnations, the price flexibility coefficient investigation yielded an inflexible price coefficient when valued at the means of the data set. For recent years, however, demand characteristics for domestically produced standard carnations have pointed to inflexible price flexibility coefficients as well. As a matter of fact, this inflexible result for recent years is true for all flowers examined except for miniature/spray carnations. Among the other species, the

Table 5-10. Summary of Price Flexibility Coefficients, as Calculated at the Mean, Maximum and Minimum Volumes of the Observed Data Sets, for Major Cut Flower Species

Species	Calculated Price Flexibility Coefficients		
	At Mean of Data Set	At Maximum Volume of Data Set <sup>a</sup>	At Minimum Volume of Data Set <sup>a</sup>
<u>Carnations:</u>			
Standard domestic	-1.28	-1.79	-0.65
Standard imports	-0.21	-0.89	0
Miniature/spray	-0.67	-1.64	-0.21
<u>Chrysanthemums:</u>			
Standard	-0.45	-0.59	-0.34
Pompon domestic	-0.72	-2.07	-0.55
Pompon imports	-0.33	-1.19	0
<u>Gladioli</u>	-0.44	-0.97	-0.27
<u>Roses:</u>			
Hybrid tea	-- <sup>b</sup>	-- <sup>b</sup>	-- <sup>b</sup>
Miniature/Sweetheart	-0.83	-1.03	-0.63

<sup>a</sup>Maximum and minimum volumes were used, *ceteris paribus*, i.e., the deflated per capita income portions of the price equations, as used to calculate the flexibilities, were used at the mean value over the respective data sets.

<sup>b</sup>No calculations were made.

price flexibility coefficients for only domestically produced pompon chrysanthemums even approached a flexible coefficient calculation in recent years.

Inflexible price flexibility coefficients translate into elastic measurements for price elasticities of demand. Hence, it would appear that florists feel comfortable in altering the quantities of various species purchased, depending on the prices charged. Even in the cases where flexible price flexibility coefficients were found, this may be true as well. As the absolute value of the reciprocal of the flexibility coefficient only serves as a lower limit for the absolute value of the elasticity, when operating in the presence of substitutes, i.e.,

$$\left| \frac{1}{F} \right| \leq \left| E_p \right| ,$$

the finding of a flexible price flexibility coefficient does not preclude species demand from also being elastic in nature.

Having said this, it may yet be wise to hypothesize about why certain species may exhibit a greater degree of demand inelasticity vs. elasticity. Miniature/spray carnations, for instance, were the only species exhibiting flexible price flexibility coefficients in recent years. This species has some unique qualities among the major cut flower species examined. As few small-sized flowers remain readily available on the marketplace, miniature/spray carnations have often filled a niche created by the need for small arrangements for hospital patients or when the daintiest flower is required. Furthermore, whereas larger sized flowers cannot be used when such requirements exist, smaller-sized species display a certain versatility, in that they can be



used to fill both small and dainty needs or *en masse* for larger arrangements. Miniature/spray carnations are also adaptable in that they can be used as either the featured flower in a centerpiece, or as a "filler flower," complementing other flowers in an arrangement. Therefore, one might hypothesize that smaller-sized flowers or extremely versatile flowers, such as miniature/spray carnations, might be among the first included by a florist in a cooler's inventory. Such dependence, then, might warrant a finding of a more inelastic demand than for some of the larger-sized species.

Conversely, the standard chrysanthemum and gladiolus analyses exhibited consistently inflexible price flexibility coefficients. These flowers are relatively limited in use because of their large sizes when compared to the sizes of other species. These species are almost restricted to use in large show pieces as used in funerals, church ceremonies or business and banquet occasions. Yet, other species may serve in such arrangements, as well as in a host of other smaller centerpieces. Hence, as florists become generally better business managers, flowers such as standard chrysanthemums or gladioli might be the first varieties purged from cooler inventories in situations where there is a question about turnover being frequent enough to justify broad variety selections. Thus, a rise in flower prices for such varieties might very well result in a sharp reduction in quantities purchased.

Finally, one should end such a discussion with a warning about drawing conclusions derived from research which used the data in the USDA Floriculture Crops reports. There seems to be tremendous skepticism among many industry analysts as to the reliability of the

data [Berninger, 1982]. Variation among the number of states included in the survey, some variation in definition of the commercial growers included in the survey and tremendous doubt as to thoroughness of the data collection yield much anxiety. Hence, some may suggest the taking of all results of any analyses using these data with a grain of salt. That avenue does exist.

Futhermore, obvious model misspecifications have occurred and, in many cases, were noted right in the text. It is because of the data limitations that effort was not made to include cross-price effects. Income elasticities were not estimated as the theoretical concept of a wholesale income elasticity is unclear in this analysis. As it was initially hypothesized that the deflated per capita disposable income was, in these wholesale models, more of a gauge of the state of the economy than a reflection of income in the normal connotation, deriving income elasticities here is probably inappropriate anyway.

Nevertheless, the results suggested by this analysis do not refute some common hypotheses about the adaptability of various species or the price elasticities of demand of various species, of flowers as a group or of flower arrangements.

Conclusions of elasticity and flexibility investigation. In concluding the discussion of elasticities and flexibilities of demand, one must immediately note that the results are probably not up to par with what might be expected after undertaking a price analysis of other commodities. An econometrician not acquainted with the complexities and foibles of the cut flower industry would certainly be disappointed with these results. The difficulties experienced by this researcher in

finding models with theoretically appropriate signs and significant parameters were indeed frustrating, especially in light of the efforts made and the results achieved. Yet, results such as those generated probably should not be unexpected, given the limitations of the data. More discussion on data restrictions will be presented in Chapter IX.

Irrespective of the results that were achieved, much can be summarized about industry demand. In the United States, there is every reason to believe that the majority of cut flower arrangement demand is currently highly inelastic in nature. The facts that nearly all cut flowers are sold at retail via arrangements, that most of these are merchandised through traditional retail flower shops and that flower shop sales are largely event oriented all suggest an inelastic demand should be expected.

For that fraction of sales that is impulse oriented, whether through mass market outlets or traditional retail flower shops, the finding of an elastic demand might be more appropriate. Indeed, in parts of Europe where impulse sales far outweigh the necessary segment of demand, cut flower sales have been found to be elastic for the industry. Storck [1979] found sales in West Germany to be elastic; there, the necessity segment of the cut flower industry is thought to account for only 20 to 25 percent of the total market. If the U.S. market becomes "Europeanized" through a surge in impulse sales, the price elasticity of demand for the industry would be expected to reflect an elastic demand as well.

For the U.S. retailer, elasticities present several options depending on the market segment at which one is aimed. By definition, inelastic demand implies that price movements will result in little

change in the number of units sold. Hence, operators focusing on this necessary demand should be less inhibited to adjust prices as needed. Indeed, it is the inelastic nature of traditional retail demand that allows the price movements (to be discussed in the next section of this chapter) to occur in the industry without restrictions by individual operators and usually without too much consumer scorn. It is also this inelastic demand that supports the maintenance of price levels when demand falls.

On the other hand, the elastic nature of impulse sales allows a retailer to exercise his real marketing prowess. Here, small changes in price can lead to great changes in quantities demanded. Product, price, place and promotion all work in concert in the marketplace to "make or break" individual operators.

Elasticities also have a role at the wholesale level. While flowers as a group are a necessary input for most retailers--thereby implying an inelastic demand for the general commodity group--the requirements that specific varieties be inventoried are certainly less assured. Hence, one must suggest that demand for the minor species is probably more elastic, i.e., more price responsive, than is demand for the major species. Furthermore, the elasticities of the less versatile species probably are much more elastic than elasticities of the more adaptable varieties. The results of the analysis tend to support this. Demand for miniature/spray carnations was found to be more inelastic in recent years than was demand for many varieties observed. Two varieties which are considered by many to be less adaptable, gladioli and standard chrysanthemums, both exhibited inflexible price flexibility coefficients across the entire data range, corresponding to elastic demand.

## Commodity Price Patterns

### Introduction

Flower prices fluctuate. They fluctuate with the general economy, and they fluctuate over the course of the year. It seems that, for the most part, flower prices fluctuate with the holiday periods experiencing the highest prices and the summer months experiencing the depths of the price valley.

Growers, as the producers, receive the lowest prices. Reports indicate that wholesalers generally charge growers a 20 to 25 percent commission on sales when made on a commission basis. Commission sales, however, are prevalent only in New York, but exist in small amounts or in isolated cases in other areas. Reports are that retailers multiply the prices they pay for flowers by two to four times [FTD, 1982a].

Any major seasonal fluctuations in price are usually passed right on through the system to the final consumer, e.g., Valentine's Day [Zeller, 1981]. However, minor price fluctuations up or down, occurring on a daily or weekly basis, are sometimes disregarded by wholesalers. Retailers often absorb minor price fluctuations to maintain a somewhat stable price for the benefit of shop personnel and, perhaps, for the benefit of the consumer. This is usually most apparent in the summer, when wholesale flower prices plummet; retail prices in many shops do not follow, except for occasional specials. As demand usually falls off during the summer months as well [Sullivan et al., 1980, p. 65], one might question the true motives of strict adherence to a year-round price level. For florists catering strictly to the "necessity" market,

however, such strategies may be truly appropriate (as the last sections's discussion on elasticities pointed out).

However, there is more to the commodity price patterns in the marketplace. This subject, perhaps, causes more ill feeling than any other among the various market segments. Growers frequently complain that retailers gain greater profits from the sale of a single flower than the grower accrues from the plant that produced it, over the course of an entire year. This is said to be true even for roses and carnations that provide repeated cuttings.

Furthermore, growers and wholesalers can be heard complaining that the prices they receive have not kept pace with inflation, while some of their costs, especially heating and labor costs, have led the inflationary price spirals of the last several years. Tables 4-3 and 4-4 showed this to be somewhat true for prices of the major species, especially after entering the high inflation period of the 1970s. Part of this trend, it must be pointed out, may have been caused by the influx of imports which have, perhaps, kept domestic prices lower than they might otherwise have been. (Imports did not penetrate the domestic marketplace in large numbers until the 1970s.)

Nevertheless, the true story dealing with commodity price patterns must be considered the seasonal price patterns that occur year in and year out. These patterns may originate at the grower level, but they work through the marketing channel. Eventually, they affect what the retail consumer pays for the product (or how many and what kinds of flowers he gets). At one end of the marketing chain, growers often suggest that any holiday price increases they institute are predicated on increased fuel costs, increased labor costs from timing the crop

or harvesting it all at once or other costs directly associated with bringing a specific crop into bloom at a specific time of the year (Appendix A). At the other end, retailers counter that increased costs of the flowers, increased delivery costs and increased labor costs from hiring extra personnel for peak holiday periods justify higher prices. In any case, the seasonality of prices is a factor which merits further investigation.

### Seasonal Price Patterns of Cut Flower Species

Methodology. The USDA Market News Service reports prices on a weekly basis as they occur on a given market day at the various wholesale flower markets. Sales activity on the reporting days is not always assured for every species in each market. Hence, summary weekly price reports, for several markets, when published as Ornamental Crops: Wholesale Market Prices [USDA, 1979-81], were used as the data source. Price information for the years 1978 to 1980 were averaged to try to eliminate any unusual price patterns for four wholesale flower markets (Boston, Chicago, Philadelphia and St. Louis) to obtain monthly price averages for various commodities. In addition, a separate data series was created by averaging California and Florida shipping point price data with import prices (listed as FOB Miami) (from Marketing California Ornamental Crops [USDA, 1979-81] and Marketing Florida Ornamental Crops [USDA, 1979-81]), when available.

In the cases of both wholesale and shipping point prices, it must be emphasized that the average prices were obtained with no consideration of quantities. The Market News Service price reports do not report

volume figures, so weighted monthly price averages were unobtainable. This may yield some misleading results.

Monthly price averages (to account for "floating" dates for various holidays such as Mother's Day and Easter) were plotted for various species for average wholesale market prices and for average shipping point prices. Care was taken to average only prices with similar product descriptions over appropriate markets. Missing observations did not enter the averaging process. Average monthly wholesale market and shipping point prices are detailed in Appendix C, Table C-3.

While the results are generally as expected, i.e., holiday periods seem to be quite discernible due to their higher prices, not all product prices moved in uniform patterns. Results, on a species-by-species basis, are presented below.

Standard carnation prices. Standard carnation (fancy grade) prices followed "a very expected" price pattern. Average price peaks occurred in February (\$0.30 per blossom at wholesale markets, nearly \$0.20 per blossom at shipping points), May (\$0.26 per blossom at wholesale markets, \$0.17 per blossom at shipping points) and in December (\$0.23 per blossom at wholesale markets, over \$0.155 per blossom at shipping points), corresponding to Valentine's Day, Mother's Day and the Christmas season. The summer doldrums were also quite evident, as wholesale carnation prices bottomed-out in August (just under \$0.16 per blossom) and shipping point prices hit their lower level in July (at just under \$0.085 per blossom). From the low price periods of summer prices displayed a continuous gradual rise until December.



Figure 5-4 shows that wholesale and shipping point prices paralleled each other closely.

Comparing shipping point prices for the standard carnations from California with those for product imported through Miami also made for some interesting observations. During most of the year, carnations from either source were priced nearly alike, almost never varying in shipping price by more than a fraction of a cent. However, during the months of January, April, June, November and December, months generally void of any price peaks (except for December), imported carnation prices were shipped from Miami (FOB) at more than \$0.01 below carnations originating in California. In January, June and December, this difference was 1.8, 1.5 and 4.8 cents per blossom, respectively. Still, with the exception of the month of December, shipping prices from either source moved in similar fashion (Figures 5-5 and 5-6).

Miniature/spray carnation prices. The only surprises that miniature/spray carnation price movements present occurs after reflecting on standard carnation price fluctuations. As with standard carnations, miniature/spray carnations peaked in price at the holiday periods of Valentine's Day, Mother's Day and Christmas. However, the particulars of the peaks differ drastically.

The average wholesale miniature/spray carnation prices reached their highest level in May (\$3.15 per bunch). A lower peak was reached at wholesale for Valentine's Day (\$2.96 per bunch). Similar price patterns are seen when observing California shipping point prices in relation to the wholesale market prices (Figure 5-7). May's California

**Average Prices  
(\$ per bloom)**

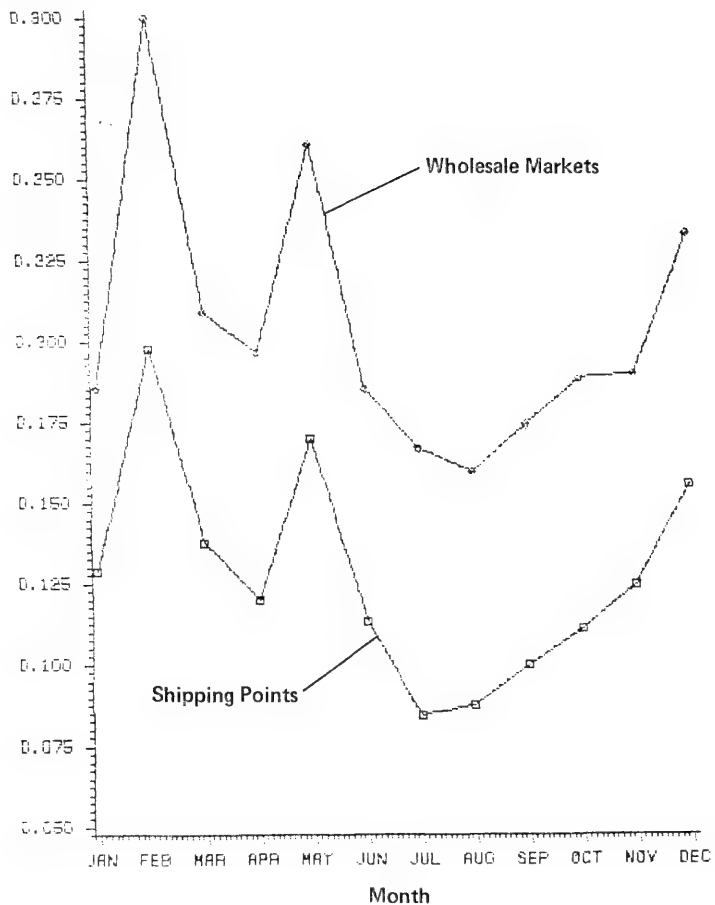


Figure 5-4. Monthly Price Variation: Average Wholesale Market and Shipping Point Prices Compared for Fancy Grade Standard Carnations, 1978-1980

SOURCE: USDA, Marketing California Ornamental Crops [1979-81]; USDA, Marketing Florida Ornamental Crops [1979-81]; USDA, Ornamental Crops: Wholesale Market Prices [1979-81].

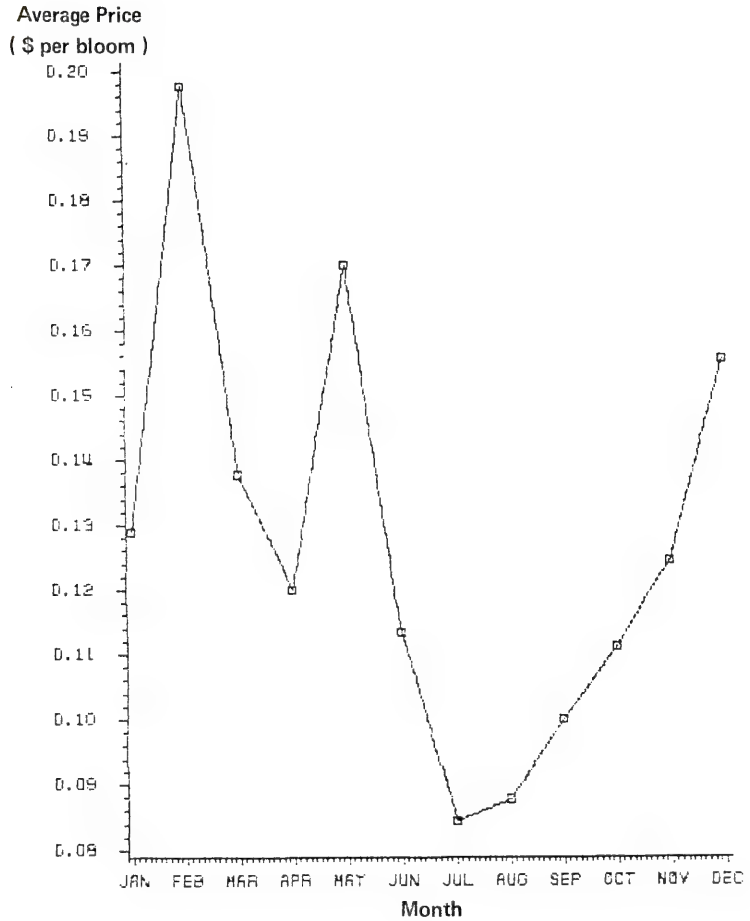


Figure 5-5. Monthly Price Variation: Average Shipping Point Prices for Fancy Grade Standard Carnations Shipped from California, 1978-1980

SOURCE: USDA, Marketing California Ornamental Crops [1979-81].

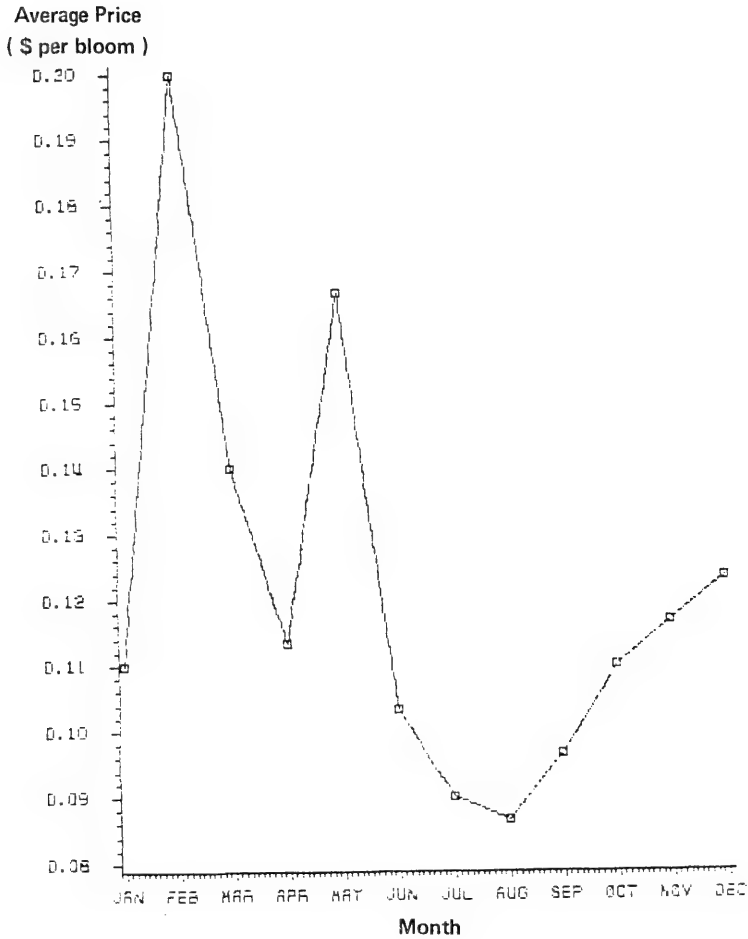


Figure 5-6. Monthly Price Variation: Average Shipping Point Prices for Fancy Grade Standard Carnations Shipped FOB Miami, 1978-1980

SOURCE: USDA, Marketing Florida Ornamental Crops [1979-81].

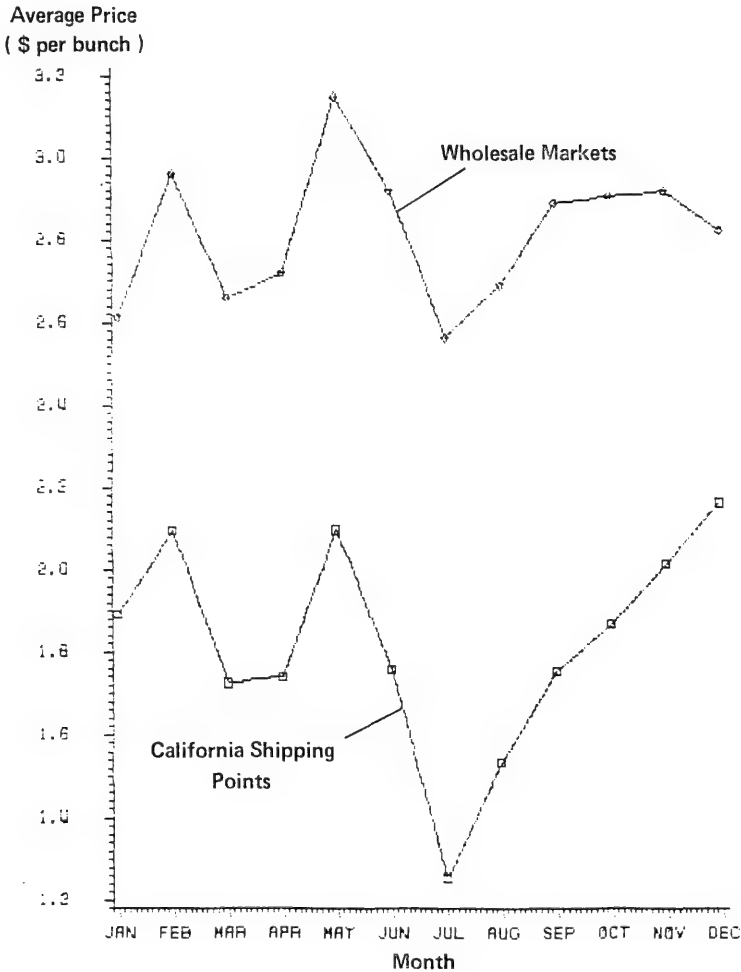


Figure 5-7. Monthly Price Variation: Average Wholesale Market and California Shipping Point Prices Compared for Miniature/Spray Carnations, 1978-1980

SOURCE: USDA, Marketing California Ornamental Crops [1979-81]; USDA Ornamental Crops: Wholesale Market Prices [1979-81].

shipping price was \$2.10 per bunch, while February's California shipping price was only one-third of a cent less per bunch.

The December average prices, as graphed, however, can be misleading at face value. Wholesale market prices fell in December relative to the three preceding months. This is probably an accurate portrayal of the facts. The majority of markets did exhibit declining prices for miniature/spray carnations from various sources. The imported miniature/spray carnations typically led the way with declining prices. The fact that increased supplies result in December, as it is often the first month of the season for Israeli imports to arrive in the U.S., helps to depress miniature/spray carnation prices at wholesale markets. Israeli imports must re-establish their niche in the marketplace, so it behooves their importers to price their product lower than prevailing market rates at least for the initial influx.

Contrary to these wholesale market price movements were the fluctuations of California shipping prices, which peaked for the year in December at nearly \$2.17 per bunch. The misleading figure, however, suggests that wholesale market prices fell as shipping point prices rose. This graph only reflects prices of California miniature/spray carnations shipped; it does not account for product from other sources (e.g., Colorado, imports, etc.), thus explaining the misleading nature of this figure. As a matter of fact, miniature/spray carnation imports tend to be heaviest in winter and early spring. Imports already begin to taper off by late spring; this may account, in part, for the higher peak exhibited in the graph for May's wholesale market prices.

It then might be most appropriate to view average wholesale market prices for miniature/spray carnations graphed singularly (Figure 5-8).

Average Price  
(\$ per bunch)

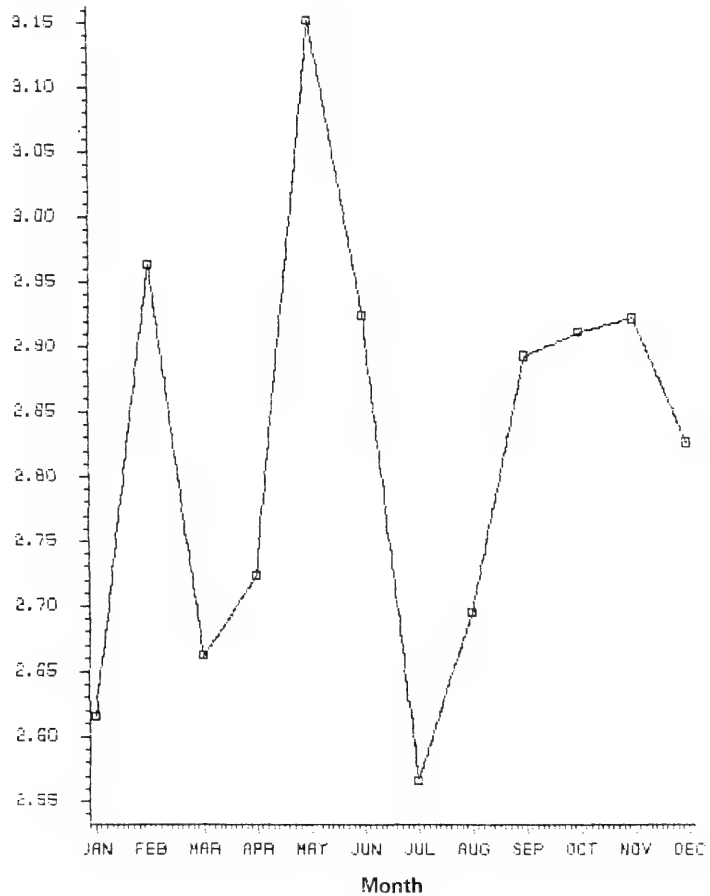


Figure 5-8. Monthly Price Variation: Average Wholesale Market Prices for Miniature/Spray Carnations, 1978-1980

SOURCE: USDA, Ornamental Crops: Wholesale Market Prices [1979-81].

Viewed in this fashion, miniature/spray carnation prices at the wholesale market level seem much more stable on a percentage change basis than did those of standard carnations. From low to high, standard carnations almost doubled, moving from a 15.9 cent low in August to a 30.0 cent high in February. Miniature/spray carnation movement, however, was restricted to a range from \$2.57 to \$3.15 per bunch.

Standard chrysanthemum prices. When one considers the chief uses in the industry of standard chrysanthemums, it would probably be difficult to fathom why much movement would occur in wholesale or shipping point prices for this commodity. The expected reads true. There is not much price fluctuation relative to other commodities. Nevertheless, standard chrysanthemums do experience price peaks and troughs.

Large to extra large standard chrysanthemum prices were examined. The month of February, in this survey, was the month of record, as average standard chrysanthemum prices hit \$0.69 per blossom at wholesale and almost \$0.39 per blossom for a California shipping point price. January and December wholesale standard chrysanthemum prices nearly matched each other at 65.82 cents and 65.75 cents per blossom, respectively. August represented the low wholesale price month when prices fell to 60.8 cents per blossom. At the same time, California shipping point prices were an identical 36.3 cents per blossom in January and November and an identical low of 28.67 cents per blossom in July and August (Figure 5-9). Again, the fact that only California averages are figured into the shipping point prices, as diagrammed, may account for some of the non-alignment of peaks and troughs between wholesale and shipping point prices (although California is the largest



Average Price  
(\$ per bloom)

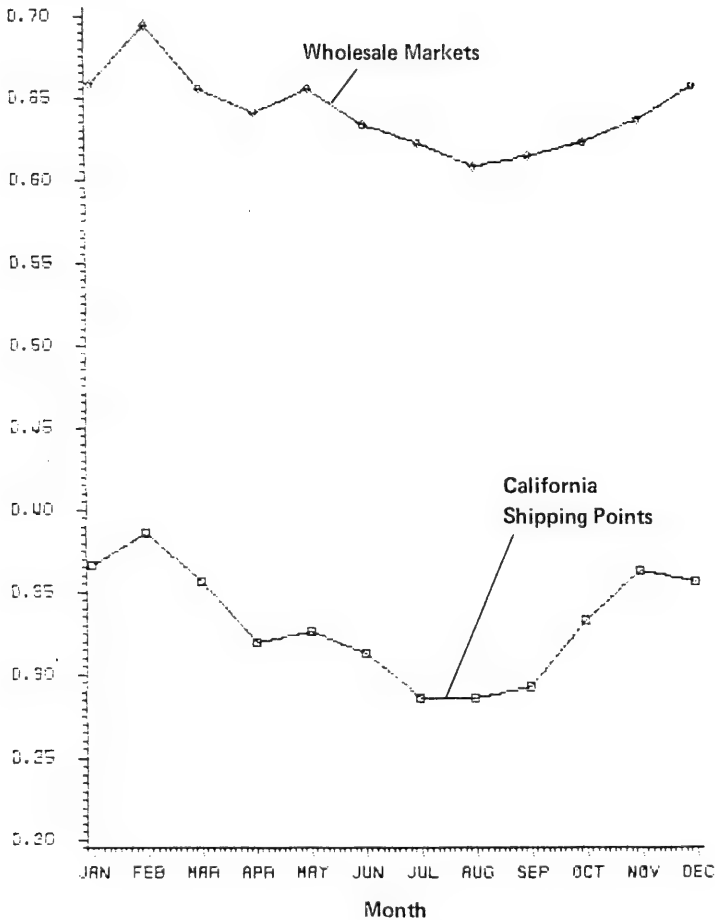


Figure 5-9. Monthly Price Variation: Average Wholesale Market and Shipping Point Prices Compared for Standard Chrysanthemums (Large - Extra Large), 1978-1980

SOURCE: USDA, Marketing California Ornamental Crops [1979-81]; USDA, Ornamental Crops: Wholesale Market Prices [1979-81].

supplier of product). Another factor which more than likely may explain some of this discrepancy, however, is that standard chrysanthemums are considered by many to be one of the easiest flowers to store. Inventoring of these flowers for weeks at a time in wholesalers' coolers is not uncommon. Hence, during some times of the year, a lag situation in pricing structure could very well occur.

Pompon chrysanthemum prices. Describing price fluctuations for pompon chrysanthemums can be difficult because of different descriptions used in various Market News reports. Some reports list these flowers as being "cushion," "daisy" or "novelty" types; others list pompon chrysanthemums simply as "assorted" or as "daisy/cushion" types. One report even differentiates cushion type pompon chrysanthemums, depending on whether they were field or greenhouse grown. Hence, averaging prices becomes difficult, if one also wants to maintain some homogeneity of product description.

Of the various market descriptions, only pompon chrysanthemum descriptions listed as "cushion types" and "assorted types" gave enough observations over enough markets and shipping points to describe adequately the price movements (without biasing results towards just one wholesale market or one shipping point). In addition, "daisy type" pompon chrysanthemum price movements will be looked at only at the wholesale market level, and "daisy/novelty types" will be examined at only the shipping point price level. In each of these categories, "enough" price observations were made to form a representative monthly average, and at least two wholesale markets or at least two shipping points were reported.

Figure 5-10 shows the relationship between average wholesale market and average shipping point prices for cushion type pompon chrysanthemums. The peak price times for cushion type pompon chrysanthemums were the months of February (\$2.06 per bunch), May (\$2.05 per bunch) and December (\$1.91 per bunch) at the wholesale market level, corresponding to Valentine's Day, Mother's Day and Christmas. As with standard chrysanthemums, there appears to be a lagged effect between shipping point prices and wholesale market prices. Peaks at the shipping points did occur in February (\$1.33 per bunch) and May (\$1.36 per bunch), but that which is probably the Christmas price peak seems to occur in November (\$1.23 per bunch). While this may, in part, correspond to higher Thanksgiving sales for this commodity, the wholesale price increases in December suggest otherwise. Again, pompon chrysanthemums are often stored for weeks (if necessary) in cooler inventories at wholesale florists, so the lagged effect may be quite understandable.

Cushion type pompon chrysanthemums displayed tremendous price fluctuations. After each of the price peaks occurred, prices, especially at the wholesale markets but, to an extent, also at shipping points became very depressed. The lowest average wholesale market prices were recorded in January (\$1.70 per bunch), just after the December peak (Figure 5-11). Another decline occurred during the months of March and April, before May's Mother's Day holiday boosted prices. Wholesale price depression then set back in after Mother's Day and worsened through the July low of \$1.72 per bunch. While the January price valley was seen at shipping points as well (Figure 5-12), the month of August displayed the lowest shipping point prices of the year (\$1.01 per bunch). One can only believe that this is a true reflection

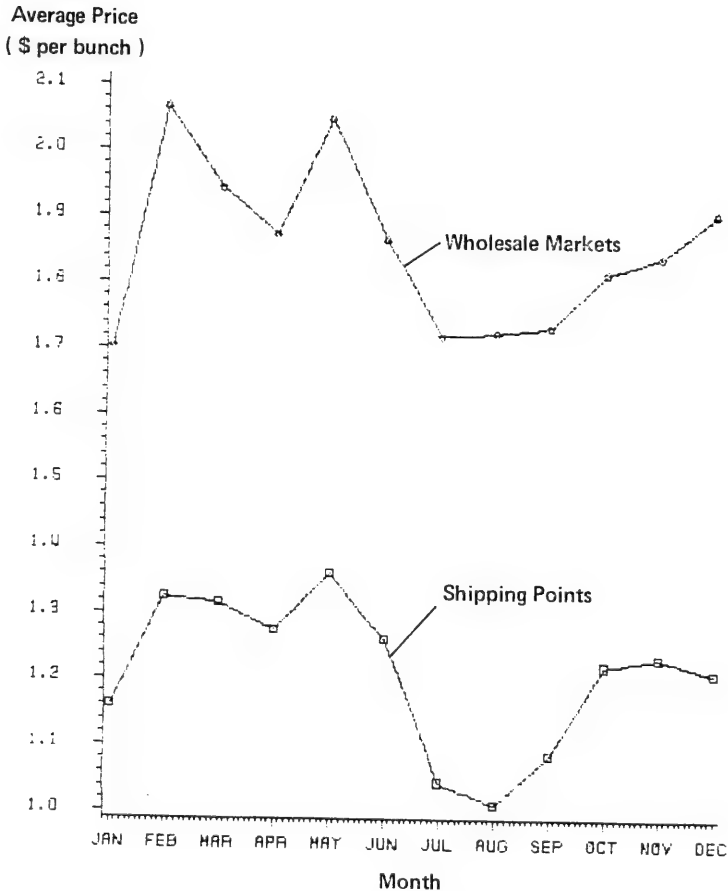


Figure 5-10. Monthly Price Variation: Average Wholesale Market and Shipping Point Prices Compared for Cushion Type Pompon Chrysanthemums, 1978-1980

SOURCE: USDA, Marketing California Ornamental Crops [1979-81]; USDA, Marketing Florida Ornamental Crops [1979-81]; USDA, Ornamental Crops: Wholesale Market Prices [1979-81].

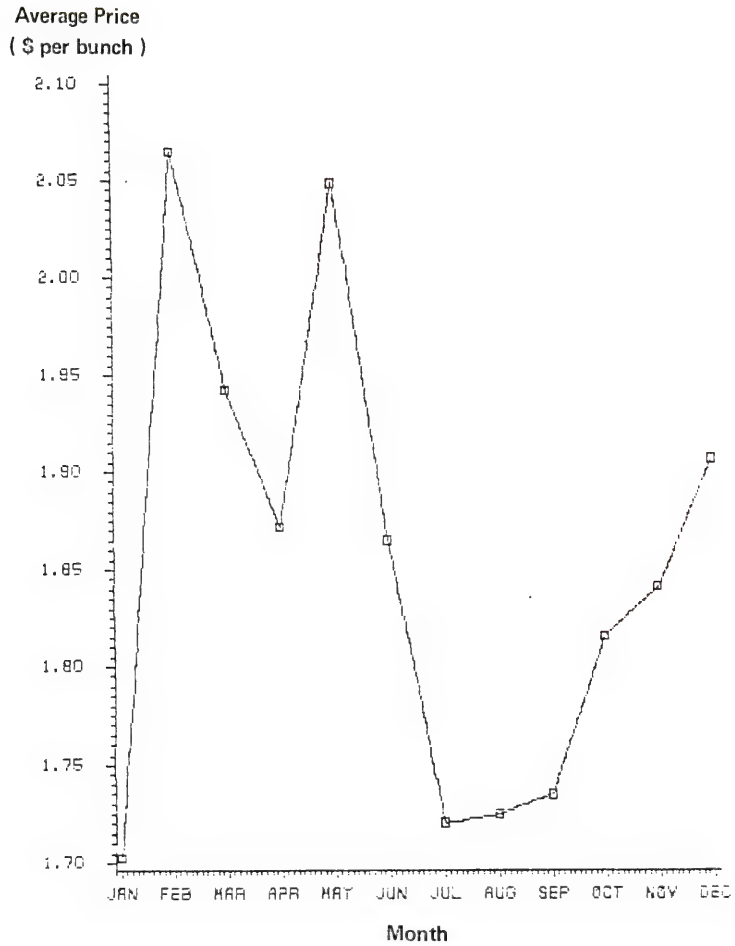


Figure 5-11. Monthly Price Variation: Average Wholesale Market Prices for Cushion Type Pompon Chrysanthemums

SOURCE: USDA, Ornamental Crops: Wholesale Market Prices [1979-81].

Average Price  
(\$ per bunch)

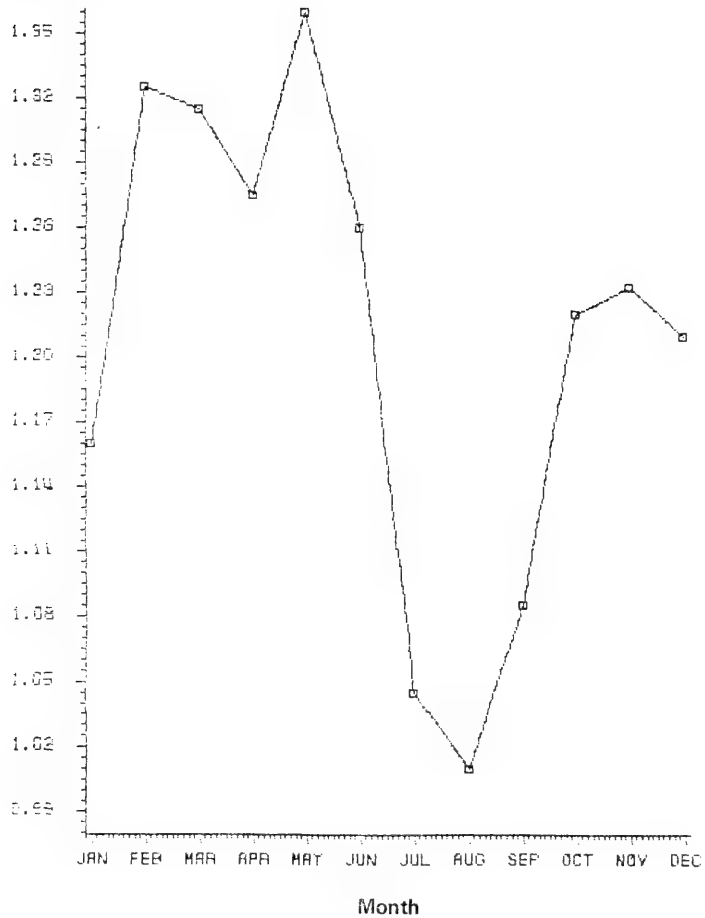


Figure 5-12. Monthly Price Variation: Average Shipping Point Prices for Cushion Type Pompon Chrysanthemums, 1978-1980

SOURCE: USDA, Marketing California Ornamental Crops [1979-81]; USDA, Marketing Florida Ornamental Crops [1979-81].

of the low summer demand, as Florida producers are not even in the market (with product) during the summer, and other producers account for all of the summer's reduced supplies.

For those pompon chrysanthemum prices listed as being for assorted types, peaks and valleys still occurred, but the fluctuations did not appear quite as drastic as for those of cushion types (Figure 5-13). Average wholesale prices for assorted pompon chrysanthemums peaked in February (\$2.32 per bunch), May (\$2.29 per bunch) and December (\$2.20 per bunch). January wholesale prices (\$2.07 per bunch) were lowest, and other price depressions occurred in April and during the summer months. August's average wholesale price of \$2.09 per bunch was the lowest during the year for assorted type pompon chrysanthemums.

Average shipping prices mirrored the average wholesale price fluctuations, although the autumn price rises seemed to be more focused at shipping points than at the wholesale markets (comparing Figures 5-14 and 5-15). This may be, in part, due to the annual reintroduction of Florida product into the marketplace, occurring every fall, which may tend to moderate the prices at wholesale markets. The same sharp pattern seemed evident among imported product (Figure 5-16) and California product (Figure 5-17). The imported product, however, does not experience as large a drop in price as does California product in summer, nor does it peak at as high a price in late autumn. Furthermore, imported product prices (FOB Miami) seemed to reflect the late November re-entry of Florida product in the marketplace with a drop in December shipping prices (Figure 5-16).

Average Price  
(\$ per bunch)

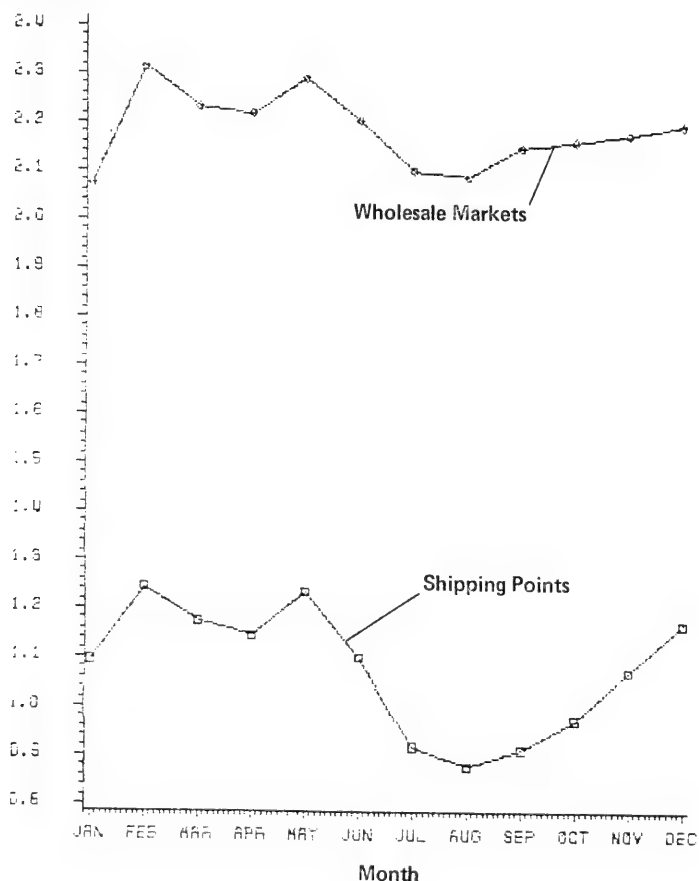


Figure 5-13. Monthly Price Variation: Average Wholesale Market and Shipping Point Prices Compared for Assorted Type Pompon Chrysanthemums, 1978-1980

SOURCE: USDA, Marketing California Ornamental Crops [1979-81]; USDA, Marketing Florida Ornamental Crops [1979-81]; USDA, Ornamental Crops: Wholesale Market Prices [1979-81].



Average Price  
(\$ per bunch)

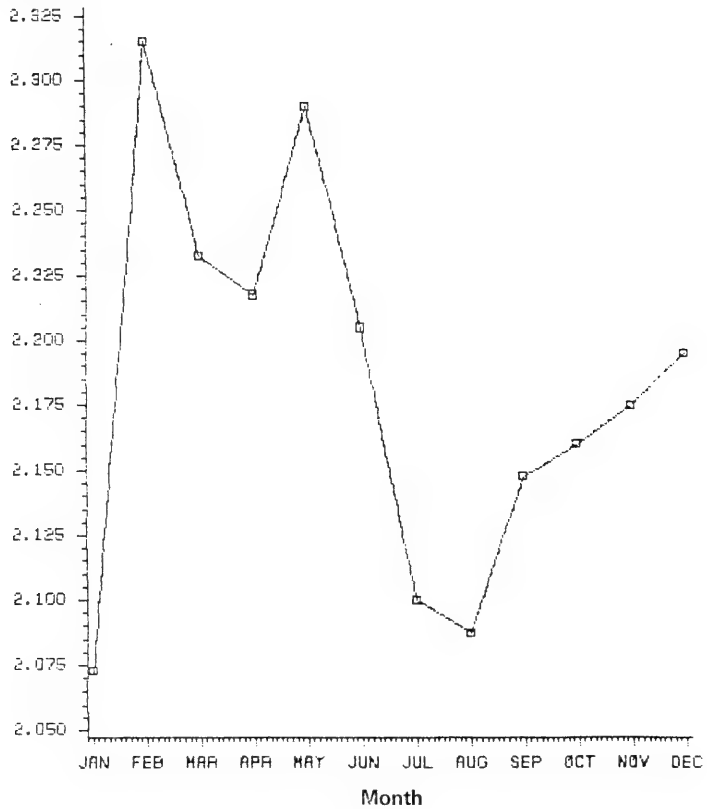


Figure 5-14. Monthly Price Variation: Average Wholesale Market Prices for Assorted Type Pompon Chrysanthemums, 1978-1980

SOURCE: USDA, Ornamental Crops: Wholesale Market Prices [1979-81].

Average Price  
(\$ per bunch)

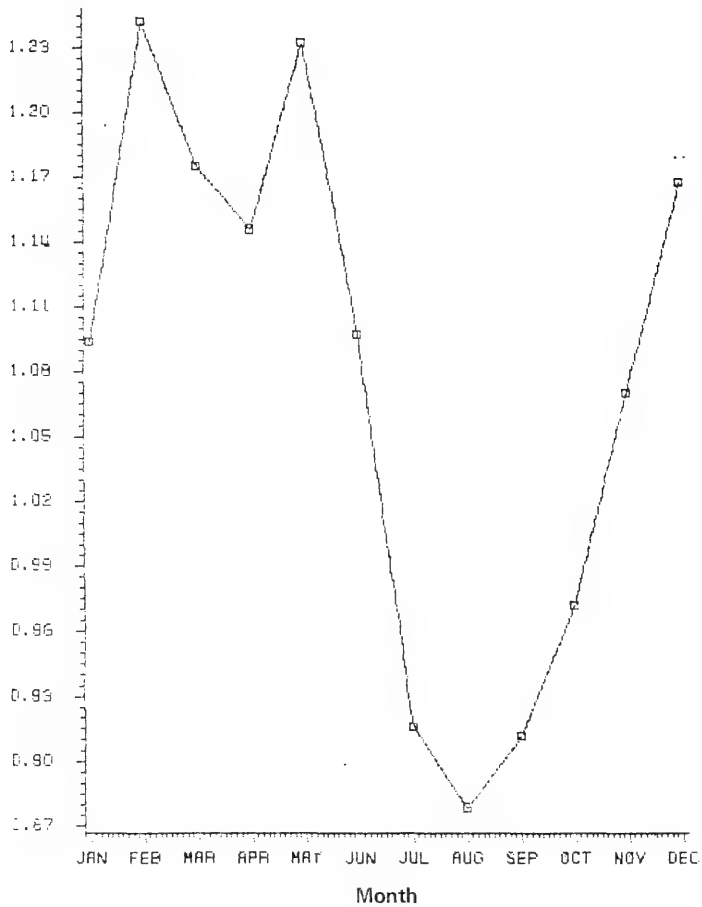


Figure 5-15. Monthly Price Variation: Average Shipping Point Prices for Assorted Type Pompon Chrysanthemums, 1978-1980

SOURCE: USDA, Marketing California Ornamental Crops [1979-81]; USDA Marketing Florida Ornamental Crops [1979-81].

Average Price  
(\$ per bunch)

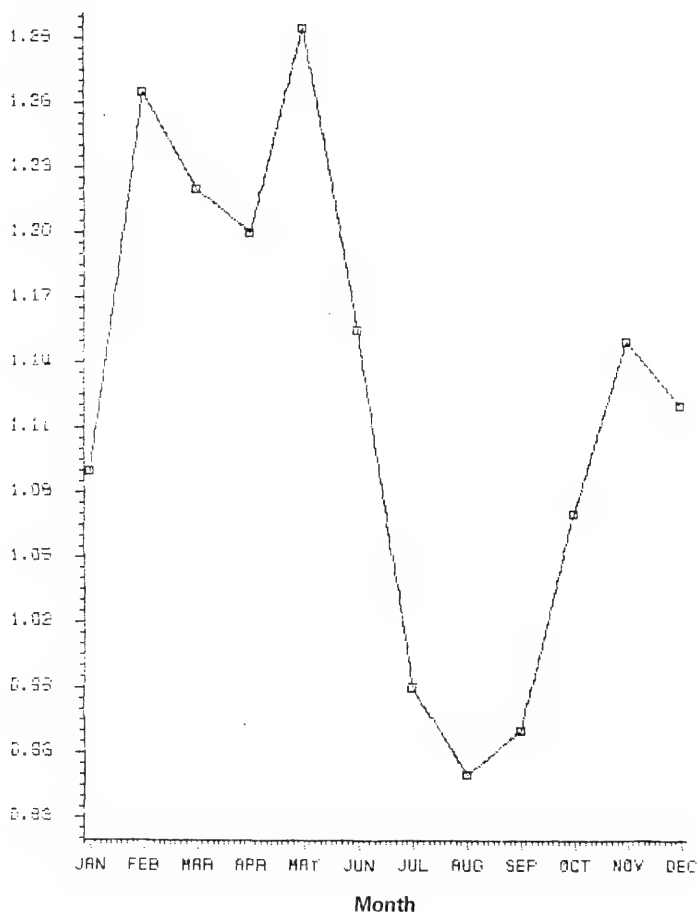


Figure 5-16. Monthly Price Variation: Average Shipping Point Prices for Imported Assorted Type Pompon Chrysanthemums (FOB Miami), 1978-1980

SOURCE: USDA, Marketing Florida Ornamental Crops [1979-81].

Average Price  
(\$ per bunch)

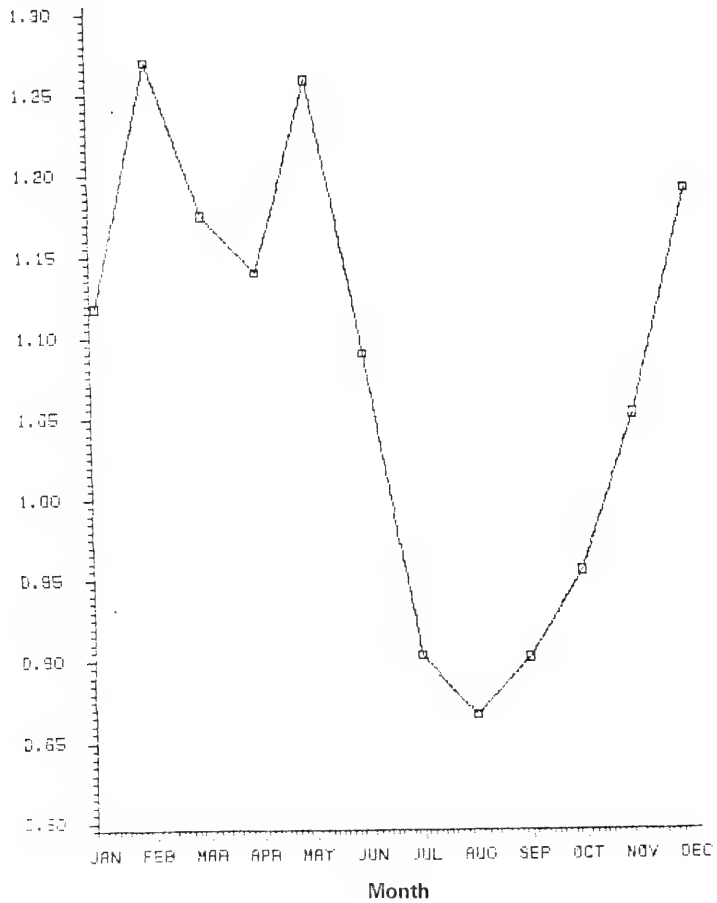


Figure 5-17. Monthly Price Variation: Average California Shipping Point Prices for Assorted Type Pompon Chrysanthemums, 1978-1980

SOURCE: USDA, Marketing California Ornamental Crops [1979-81].

Daisy type pompon chrysanthemums were examined only at the whole-sale market level. Average daisy type pompon chrysanthemum prices peaked in the spring, when one might expect these flowers to be most popular. Figure 5-18 shows the highest average price to occur in May (\$2.33 per bunch), followed by February's \$2.23 per bunch. As a matter of fact, the entire spring season experiences generally higher daisy type pompon chrysanthemum prices. The February through June period witnesses prices higher than even the Christmas peak for this commodity. This five month period's average price is \$2.18 per bunch, compared with December's \$1.98 per bunch and \$1.91 per bunch average for the seven months of January and July through December. The lowest average whole-sale price month for daisy type pompon chrysanthemums is September, with a price of \$1.87 per bunch. While having September as a low price month is unusual, it may be explained by comparing these flowers with other flower varieties and other pompon chrysanthemum flower types; it is not that unexpected, considering the spring-like character of this particular pompon chrysanthemum variance.

Finally, the average shipping point prices for "daisy/novelty" types of pompon chrysanthemums were examined. (It should be pointed out that these data are only for the years 1979 and 1980 and cover only Florida grown product and that product imported through Miami.) As with the average wholesale market prices for the daisy type pompon chrysanthemums just examined, the average May shipping point price for daisy/novelty type pompon chrysanthemums (\$1.51 per bunch) was highest. The spring months, including February through June, also displayed a markedly higher price average (\$1.45 per bunch) than did other months of the year (Figure 5-19). This may suggest that the designation of

Average Price  
(\$ per bunch)

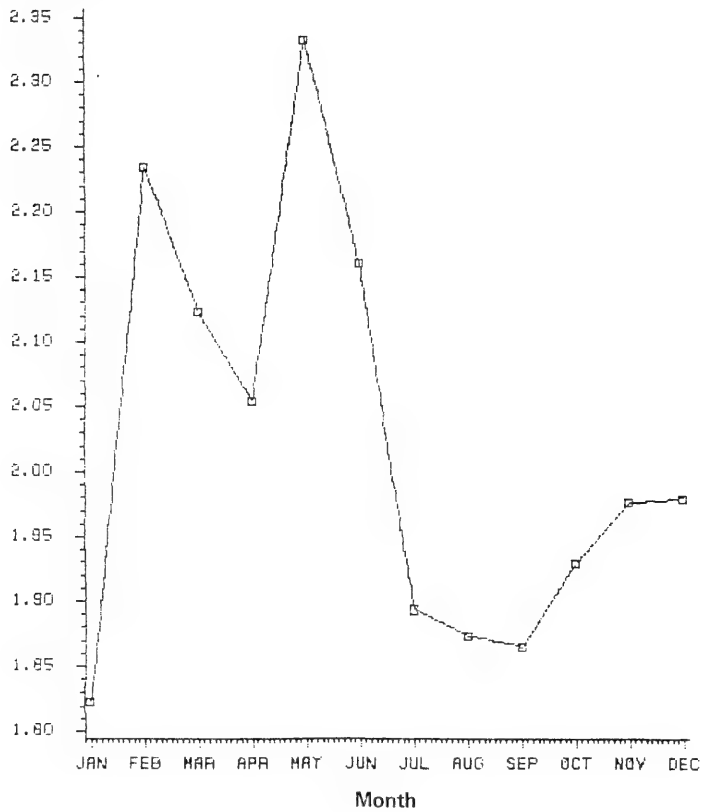


Figure 5-18. Monthly Price Variation: Average Wholesale Market Prices for Daisy Type Pompon Chrysanthemums, 1978-1980

SOURCE: USDA, Ornamental Crops: Wholesale Market Prices [1979-81].

Average Price  
(\$ per bunch)

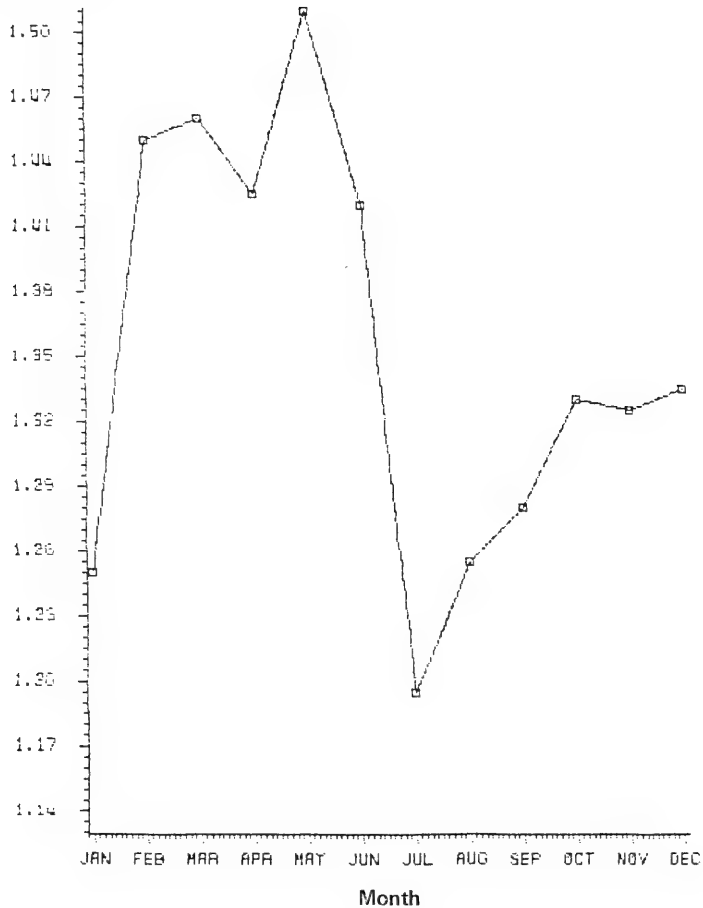


Figure 5-19. Monthly Price Variation: Average Shipping Point Prices for Daisy/Novelty Type Pompon Chrysanthemums, 1979-1980

SOURCE: USDA, Marketing California Ornamental Crops [1979-81]; USDA, Marketing Florida Ornamental Crops [1979-81].

"daisy/novelty" types is actually composed of a flower mix that is largely daisy, with only minor amounts of novelty type pompon chrysanthemums. This is to be expected when one considers the minimal numbers of novelty type pompon chrysanthemums that one typically finds in the marketplace. This mix may be somewhat more heavily novelty type pompon chrysanthemums in the late fall, however, as the October to December period exhibits a respectable shipping point price average of \$1.33 per bunch. January, July and August represented the lowest average shipping point price months with \$1.25, \$1.20 and \$1.26 per bunch, respectively.

The next two figures show another interesting pricing phenomenon. Figure 5-20 shows that daisy/novelty type pompon chrysanthemums shipped from (and grown in) Florida, peaked in average price in March (\$1.37 per bunch) and hit their low in January (\$1.27 per bunch). (Note that none of these pompon chrysanthemums are shipped from Florida (producing sites) during Florida's hot summer months, June through October.) On the other hand, imported daisy/novelty type pompon chrysanthemums, shipped FOB Miami (Figure 5-21), peaked in average price in May (\$1.66 per bunch) and hit their low in July (\$1.20 per bunch). Comparing the price axes of the two shipping points, Figure 5-20 for Florida grown product and Figure 5-21 for the imported product, with the price axis of Figure 5-19 for the average shipping point price, indicates that the imported product tended to keep average shipping point prices high. The lower-priced Florida product, on the other hand, depressed average daisy/novelty type pompon chrysanthemum prices. This may be a reflection on perceived quality (in the marketplace), or on the fact that Florida producers find that, in order to maintain a niche in the market,



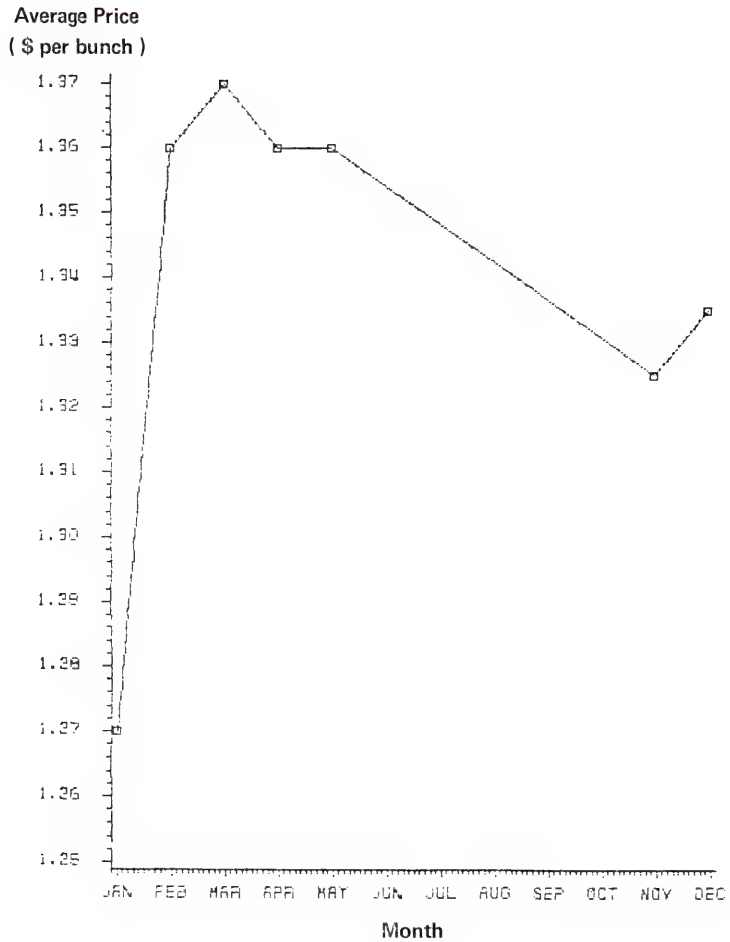


Figure 5-20. Monthly Price Variation: Average Shipping Point Prices for Florida Produced Daisy/Novelty Type Pompon Chrysanthemums, 1979-1980

SOURCE: USDA, Marketing Florida Ornamental Crops [1979-81].

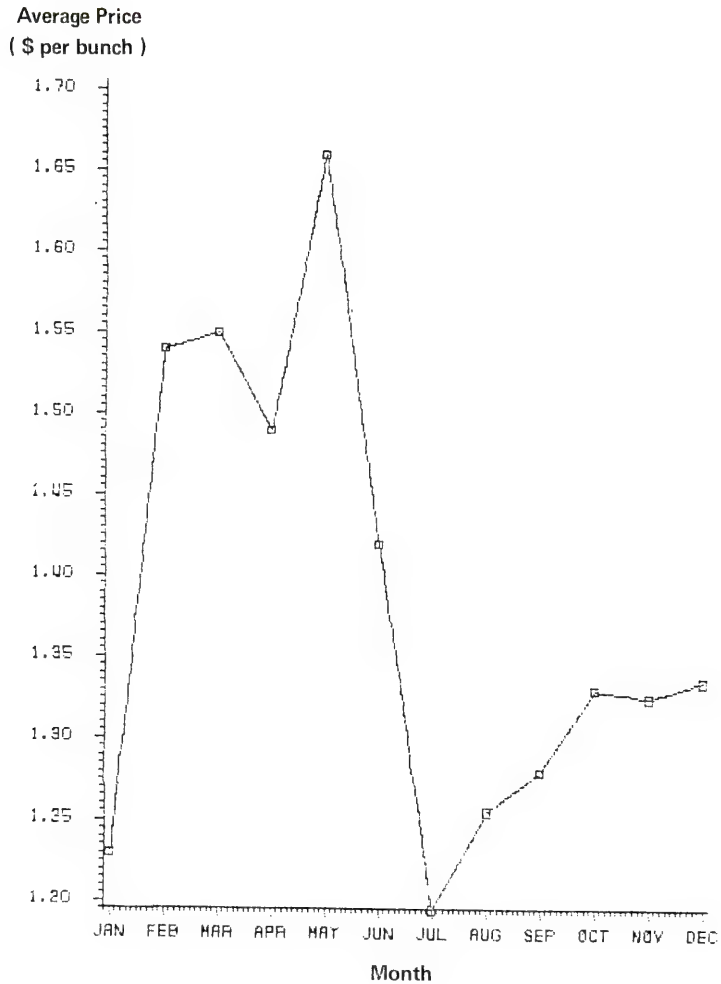


Figure 5-21. Monthly Price Variation: Average Shipping Point Prices for Imported Daisy/Novelty Type Pompon Chrysanthemums (FOB Miami), 1979-1980

SOURCE: USDA, Marketing Florida Ornamental Crops [1979-81].

they must price their product lower (since they only supply product for seven months of the year).

Gladiolus prices. Figure 5-22 compares the average wholesale market and average shipping point prices for gladioli (fancy grade: 10s bunched). The data for shipping point prices, which include Florida and California shipping point prices only, can be misleading. As graphed, the wholesale market prices fall below shipping point prices for August and September. Dissection of these data into various figures will, hopefully, clarify this anomaly.

Florida accounted for an average of over 66 percent of gladiolus production over the 1978-1980 period under consideration. Yet, Florida producers, due to the hot summer months, account for no gladiolus production during July, August or September. Filling the void created by this absence of Florida product is product which is often locally produced in the summer in many states of the Upper Midwest, as well as in New Jersey and North Carolina. There are no shipping point prices available for the less expensive locally grown product, however. This, along with the absence of the Florida product, which normally ships for prices much below that of the California product, creates the illusion of a rising average shipping point price during the summer months. What is actually occurring on the graph, then, is that the months of July, August and September only show average California shipping point prices, which are higher than the average of all product on the market at that time. The depressed average wholesale market prices depicted are not an unusual phenomenon for cut flowers in the summertime. Realizing these limitations, the analysis proceeds.

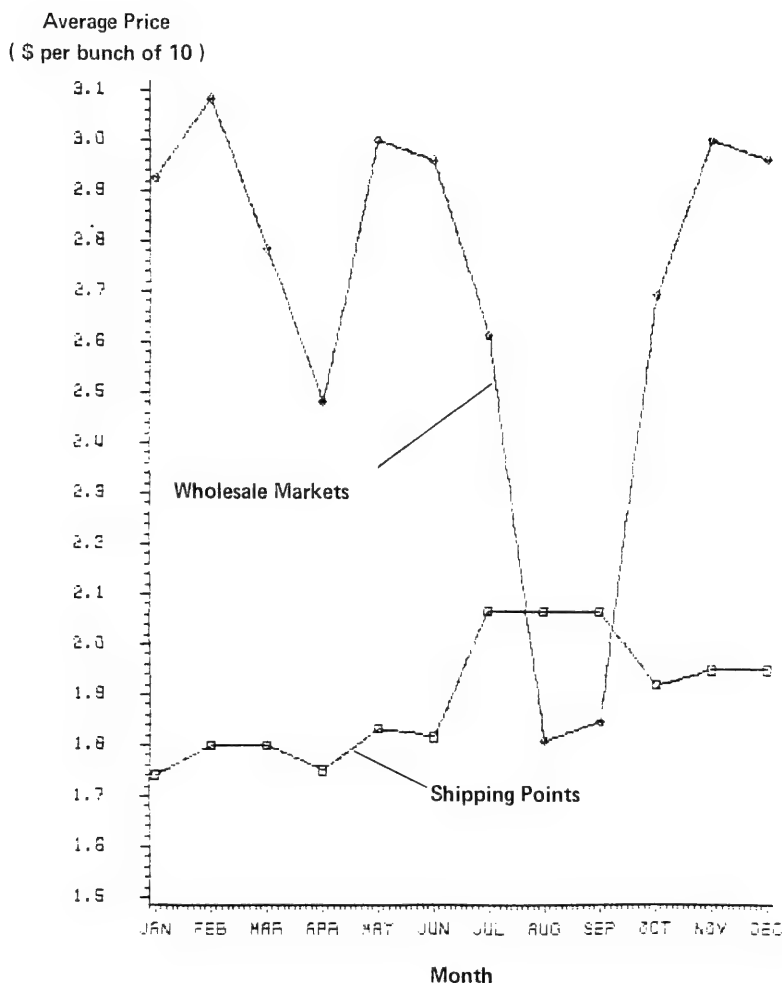


Figure 5-22. Monthly Price Variation: Average Wholesale Market and Shipping Point Prices Compared for Fancy Grade Gladioli 1978-1980

<sup>a</sup>Only California shipping point prices are reflected during the months of July, August and September, as Florida does not produce then. This portrays the incorrect impression that wholesale market prices are cheaper than shipping point prices. In fact, cheaper local production which is not reflected in the graph, replaces Florida production here.

SOURCE: USDA, Marketing California Ornamental Crops [1979-81]; USDA, Marketing Florida Ornamental Crops [1979-81]; USDA, Ornamental Crops: Wholesale Market Prices [1979-81].

Figure 5-23 shows that average wholesale market prices for gladioli behave as one might expect for most flowers, being higher around the holidays and lower during other times of the year. February's price of \$3.08 per bunch (of 10), May's price of \$3.00 per bunch and December's price of \$2.96 per bunch for average wholesale market prices show the effect of the holidays. This compares with a yearly raw average of monthly wholesale market prices of \$2.68 per bunch (over the survey). Yet, other months also showed high prices, an effect, perhaps, of other holidays, weddings or other affairs. January's wholesale market price of \$2.93 per bunch may be due to high funeral sales, perhaps due to harsh winter weather. June's high \$2.96 per bunch may result from the extensive use of gladioli at weddings, and November's (higher-than-December) price of \$3.00 per bunch may be a combination of Thanksgiving sales and pre-Christmas sales for upcoming parties, etc.

If one excludes the summer months of July, August and September from consideration, the average shipping point prices, as graphed in Figure 5-24 look to be fairly stable, yet rising during the year. Some volatility did occur, but January's \$1.74 per bunch and December's \$1.95 per bunch would represent the low and high months, respectively, given the data omission for summer.

The volatility that occurs seems generally consistent with the pattern of holidays throughout the year. Examination of Figures 5-25 and 5-26 indicate that much of the radical shipping point price fluctuation is caused by Florida product rather than California product. (It is important to note the differences in price axes for each state's product.) Yet, average gladiolus prices of product shipped from both states fluctuated only \$0.20 per bunch during the year (over the

Average Price  
(\$ per bunch of 10)

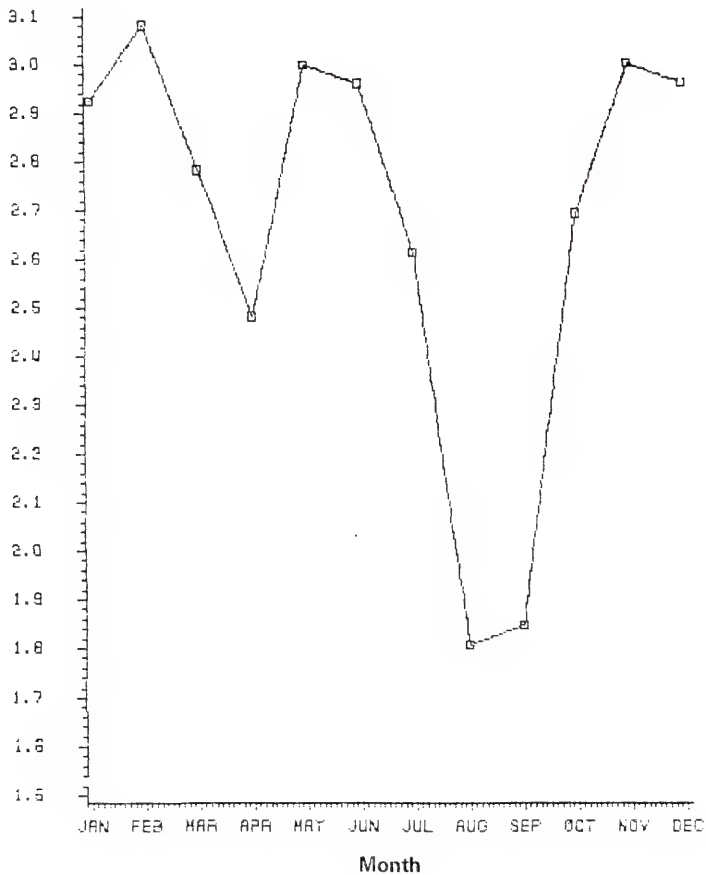


Figure 5-23. Monthly Price Variation: Average Wholesale Market Prices for Fancy Grade Gladioli, 1978-1980

SOURCE: USDA, Ornamental Crops: Wholesale Market Prices [1979-81].

Average Price  
( \$ per bunch of 10 )

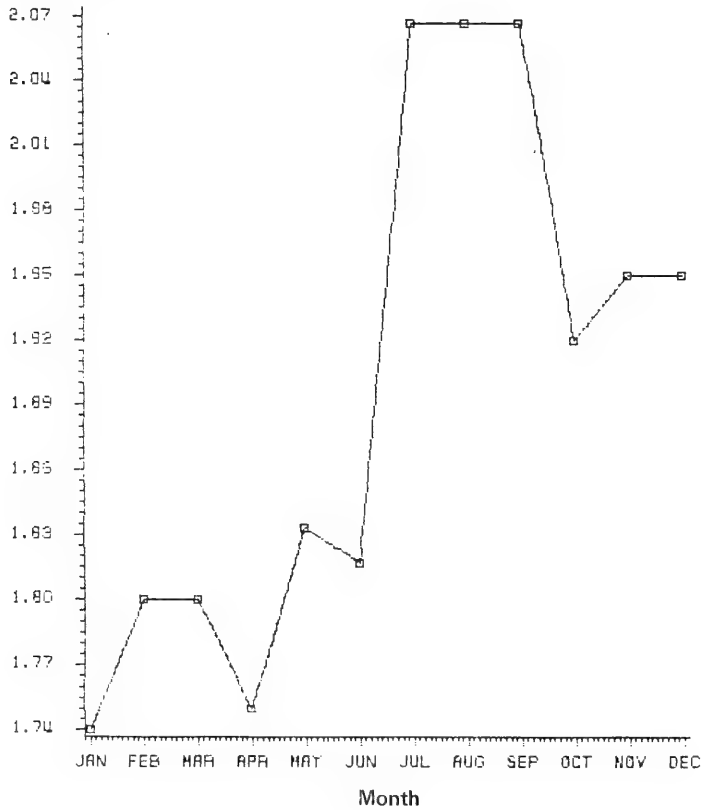


Figure 5-24. Monthly Price Variation: Average Shipping Point Prices for Fancy Grade Gladioli, 1978-1980

SOURCE: USDA, Marketing California Ornamental Crops [1979-81]; USDA, Marketing Florida Ornamental Crops [1979-81].

Average Price  
(\$ per bunch of 10)

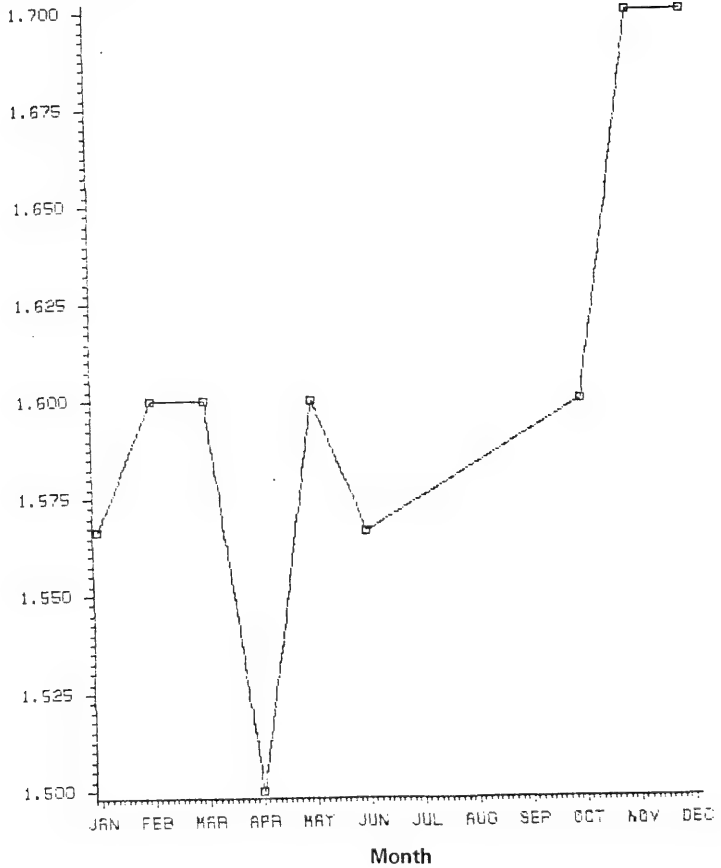


Figure 5-25. Monthly Price Variation: Average Shipping Point Prices for Florida Produced Fancy Grade Gladioli, 1978-1980

SOURCE: USDA, Marketing Florida Ornamental Crops [1979-81].



Average Price  
( \$ per bunch of 10 )

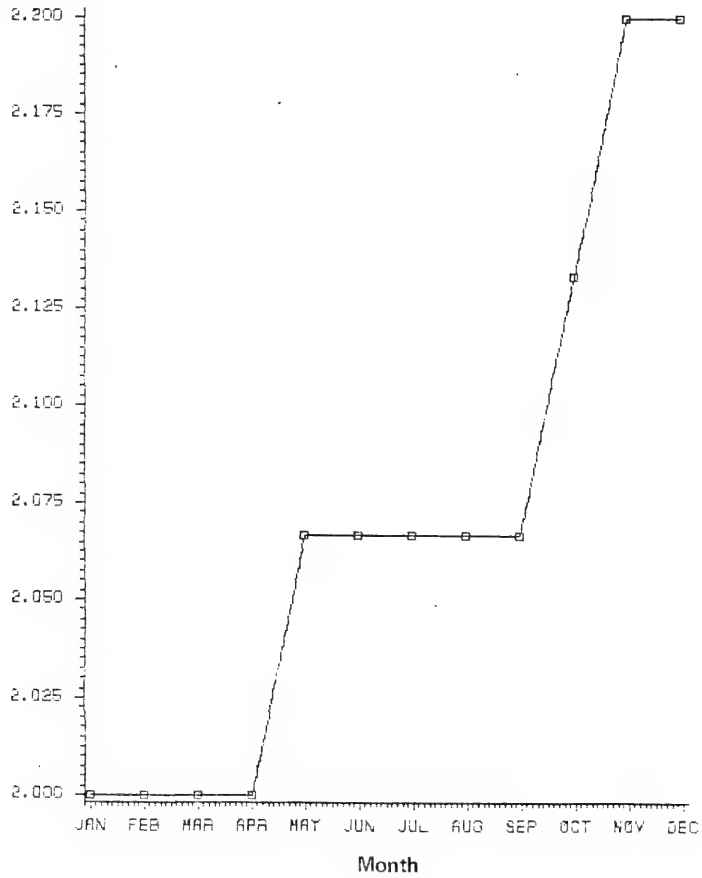


Figure 5-26. Monthly Price Variation: Average Shipping Point Prices for California Produced Fancy Grade Gladioli, 1978-1980

SOURCE: USDA, Monthly California Ornamental Crops [1979-81].

survey). Average California gladiolus shipping point prices rose, in a stair-step fashion, from \$2.00 per bunch for the first four months of the year, to nearly \$2.07 per bunch from May until September, to \$2.13 per bunch for October and, then, finally to \$2.20 per bunch for November and December. Florida shipping point prices, on the other hand, moved more according to the holidays in the winter and spring. The low price occurred in April (\$1.50 per bunch). The autumn prices moved upward after the summer's non-production period, and the annual high of \$1.70 per bunch occurred in November and December.

Hybrid tea rose prices. Price movements for hybrid tea roses were among the most straightforward of all average pricing patterns investigated. Rose prices mirror each other at the wholesale market and California shipping point level (Figure 5-27). Average prices peaked in February, as the effects of Valentine's Day were felt at the wholesale market level, with just over a \$1.05 average per stem (26 inches and longer), and at the California shipping points, where roses garnered over \$0.52 per stem. Valentine's Day obviously shocks the consuming public. Roses only experienced a slight rebound (\$0.05 at California shipping points to \$0.34 per stem and \$0.10 at wholesale market level to \$0.68 per stem) for May's Mother's Day sales, after the March and April price declines. Prices again fell after Mother's Day until they reached a low of \$0.46 average per stem at the wholesale markets and \$0.20 average per stem at California shipping points in July. After the July lows, rose prices began climbing gradually, hitting nearly \$0.65 per stem at the wholesale markets and \$0.34 per stem at California shipping

Average Price  
(\$ per bloom)

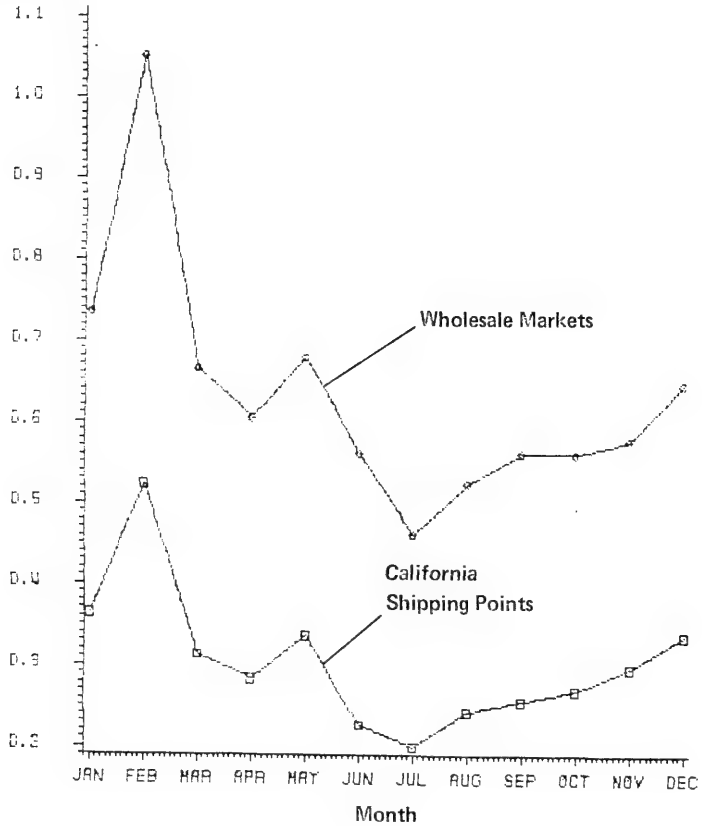


Figure 5-27. Monthly Price Variation: Average Wholesale Market and California Shipping Point Prices Compared for Hybrid Tea Roses (26" and Longer), 1978-1980

SOURCE: USDA, Marketing California Ornamental Crops [1979-81]; USDA, Ornamental Crops: Wholesale Market Prices [1979-81].

points in December. They then continued rising until the following February.

Sweetheart/miniature rose prices. Finally, sweetheart/miniature rose prices (10 inches and longer) all "behaved reasonably," reacting to Valentine's Day, Mother's Day and Christmas in February, May and December, respectively (Figure 5-28). Sweetheart/miniature roses, however, probably experienced a longer summer lull in prices than that of most flowers. The July lows of \$0.235 per stem at the wholesale market level and the just under \$0.12 per stem at the California shipping points do not escalate more than 1.30 cents and 2.67 cents average at wholesale market and California shipping points, respectively, even through November. Prices rose in December (to \$0.32 per stem at wholesale and to \$0.18 per stem at California shipping points) and continued their climb until they peaked at 51.5 cents per stem and 25.3 cents per stem at wholesale markets and California shipping points, respectively, in February. After Valentine's Day, depression sets in. Sweetheart/miniature rose prices recovered to \$0.44 at wholesale markets and \$0.22 at California shipping points for May sales.

Price movement summary. In summary, one finds that prices for most products move up in the spring, down in mid-summer and then back up in the autumn and winter. Yet, not all products experienced their price peaks and depths during the same months.

Tables 5-11 and 5-12 summarize the peak and low price averages and the months in which they occur, as well as the average prices during the survey, for each of the major cut flower species, for shipping points and for wholesale markets, respectively. As can be seen, the holiday

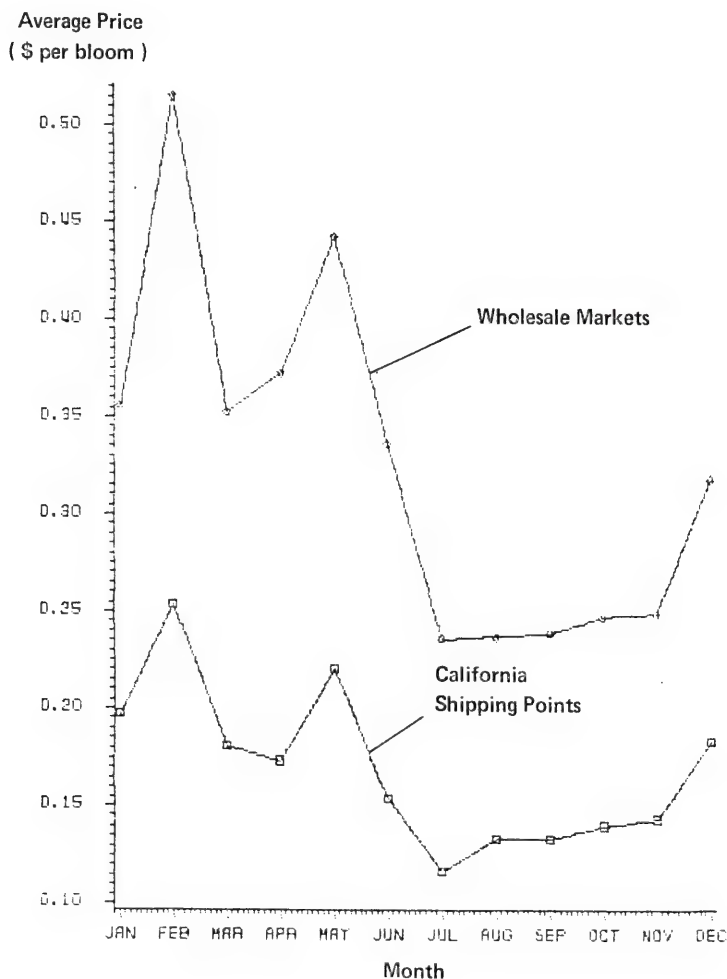


Figure 5-28. Monthly Price Variation: Average Wholesale Market and California Shipping Point Prices Compared for Sweetheart/Miniature Roses (10" and Longer), 1978-1980

SOURCE: USDA, Marketing California Ornamental Crops [1979-81]; USDA, Ornamental Crops: Wholesale Market Prices [1979-81].

Table 5-11. Summary of High and Low Shipping Point Average Prices, the Months Occurring, and Average Shipping Point Prices, for Selected Cut Flower Species, in 1978-1980 Market Price Survey

Species	High Price Average	(Month(s))	(\$)	Low Price Average	(Month(s))	(\$)	Average Annual Price
<u>Carnations:</u>							
Standard (per bloom)		February	0.20		July	0.08	0.13
Miniature/spray (per bunch)		December	2.17		July	1.26	1.83
<u>Chrysanthemums:</u>							
Standard (per bloom)		February	0.39		July/August	0.29	0.33
Cushion pompon (per bunch)		February	1.33		August	1.01	1.21
Assorted pompon (per bunch)		February	1.24		August	0.88	1.08
Daisy/novelty pompon <sup>a</sup> (per bunch)		May	1.51		July	1.20	1.35
Gladioli (per bunch)		November/ December <sup>b</sup>	1.95		January <sup>b</sup>	1.74	1.90 <sup>c</sup>
<u>Roses:</u>							
Hybrid tea (per bloom)		February	0.52		July	0.20	0.30
Sweetheart/miniature (per bloom)		February	0.25		July	0.12	0.17

<sup>a</sup>Two-year average only (1979-80).

<sup>b</sup>Excludes period of July-August when only California prices are reported. The average for those months was \$2.07/bunch, over the survey. Counting all locally produced and marketed gladioli, however, the summer is probably the realistic low price season.

<sup>c</sup>Twelve-month average.

Table 5-12. Summary of High and Low Wholesale Market Average Prices, the Months Occurring, and Wholesale Market Price Averages, for Selected Cut Flower Species, in the 1978-1980 Market Price Survey

Species	High Price Average	(Month)	(\$)	(Month)	Low Price Average	(\$)	Average Annual Price
<u>Carnations:</u>							
Standard (per bloom)		February	0.30			0.16	0.20
Miniature/spray (per bunch)		May	3.15		August July	2.57	2.82
<u>Chrysanthemums:</u>							
Standard (per bloom)		February	0.69		August	0.61	0.64
Cushion pompon (per bunch)		February	2.06		January	1.70	1.85
Assorted pompon (per bunch)		February	2.32		January	2.07	2.18
Daisy pompon (per bunch)		May	2.33		January	1.82	2.02
<u>Gladioli</u> (per bunch)		February	3.08		August	1.81	2.68
<u>Roses:</u>							
Hybrid tea (per bloom)		February	1.05		July	0.46	0.64
Sweetheart/miniature (per bloom)		February	0.52		July	0.24	0.33

seasons associated with February, May and December accounted for all of the shipping point price highs. February had more price highs than any other month. All shipping point price lows occurred in the summer, with the possible exception of that for gladioli. For this species, the shipping point price data would indicate the low occurs in January. However, there are no shipping point price data for the locally grown product which dominates many markets in the summertime. Had these data been available and included in the survey, the summer months would probably account for all shipping point price lows.

February was, by far, the month in which wholesale market prices for flowers generally peaked (Table 5-12). Only for miniature/spray carnations and daisy pompon chrysanthemums did wholesale market prices peak in another month (May for both these products). Wholesale market price lows did not display an equal conformity, however. Wholesale market price lows occurred in January for cushion, assorted and daisy type pompon chrysanthemums. Miniature/spray carnations and hybrid tea and sweetheart/miniature roses reached the depths of their wholesale price valleys in July. August accounted for the wholesale market price lows for standard carnations, standard chrysanthemums and gladioli.

#### Wholesale Marketing Margins

The difference between the average shipping point price and the average wholesale market price for any commodity is the average wholesale marketing margin. This represents the average shipping, handling, service and other associated marketing costs required to bring product from the shipping points to the wholesale markets. Table 5-13 lists these average wholesale marketing margins for the various major cut



Table 5-13. The Range of Wholesale Marketing Margins, the Months Occurring, and the Average Wholesale Marketing Margins, for Selected Cut Flower Species in the 1978-1980 Market Price Survey

Species	Wholesale Marketing Margins				Average \$
	High		Low		
	\$	Month Occurring	\$	Month Occurring	
<u>Carnations:</u>					
Standard (per bloom)	0.102	February	0.057	January	0.076
Miniature/spray (per bunch)	1.311	July	0.660	December	0.994
<u>Chrysanthemums:</u>					
Standard (per bloom)	0.336	July	0.274	November	0.309
Cushion pompon (per bunch)	0.740	February	0.543	January	0.645
Assorted pompon (per bunch)	1.236	September	0.979	January	1.108
<u>Gladioli</u> (per bunch)	1.283	February	0.733 <sup>a</sup>	April	1.037 <sup>a</sup>
<u>Roses:</u>					
Hybrid tea (per bloom)	0.528	February	0.262	July	0.332
Sweetheart/miniature (per bloom)	0.262	February	0.103	August	0.156

<sup>a</sup>Excludes July-September period from consideration, when marketing margins would be reported as negative because of the aberrations in the data.

flower species. Except for gladioli, where the months of July, August and September were excluded because of the somewhat biased (and unrealistic) shipping point data for those months (see the section on gladioli price movements above), all of these average wholesale marketing margins can be derived by subtracting the average shipping point prices (Table 5-11) from the average wholesale market prices (Table 5-12). The table also lists the range of these wholesale marketing margins, i.e., the high and low wholesale marketing margins (derived by taking a month by month difference of the average shipping point prices and the average wholesale market prices) and the months in which the high and low marketing margins occur.

It becomes very interesting to note when the high and low points of the wholesale marketing margin range occur. Comparing the months listed on Tables 5-12 with those appearing on Table 5-13 suggests that the wholesale marketing margins are often the highest at the same time wholesale market prices are the highest. This is true of margins for standard carnations, cushion type pompon chrysanthemums, gladioli and hybrid tea and sweetheart/miniature roses. Comparing Table 5-13 with Table 5-11 shows that marketing margins also peak when shipping point prices peak for all of these species except gladioli. Wholesale marketing margins are also the lowest at the same time that wholesale market or shipping point prices are the lowest for some species. The wholesale marketing margins can be seen in Figures 5-4 (standard carnations), 5-7 (miniature/spray carnations), 5-9 (standard chrysanthemums), 5-10 (cushion type pompon chrysanthemums), 5-13 (assorted type pompon chrysanthemums), 5-22 (gladioli), 5-27 (hybrid tea roses),

and 5-28 (sweetheart/miniature roses), as the difference between the shipping point and wholesale market prices.

From these diagrams and the above discussion, it appears that some operators in the grower-to-wholesaler distribution system may be taking advantage of demand inelasticities as they occur around holidays. However, Table 5-14 may suggest otherwise. Although the dollar value of the wholesale marketing margins may peak at the same times as wholesale market prices for some species, it appears that the percentage marketing margins are often higher during the low price months than they are when wholesale market prices are high. This may be a result of wholesalers raising their margins during low sales periods to cover operating costs and lowering margins during high sales periods to keep prices from escalating to too high a level. In this way, wholesalers would rely on greater sales volumes during peak market activity to offset their lower margins. An alternative explanation would be that, if margins are more stable than the base price, then marketing margins would always represent a higher percentage with lower prices than with higher prices due to the arithmetic calculations employed.

Finally, Table 5-15 summarizes the shipping point and wholesale market price raw averages of monthly prices over the survey and the average wholesale marketing margins. The table also provides a tabulation of the percentage of the wholesale market price that is accounted for by the marketing margin. Hybrid tea and sweetheart/miniature roses, standard chrysanthemums and assorted pompon chrysanthemums all display wholesale marketing margins above the 42.8 percent average for the commodities listed; standard and miniature/spray carnations, cushion pompon chrysanthemums and gladioli display wholesale

Table 5-14. Summary of Wholesale Marketing Margins for the Months of High and Low Average Wholesale Prices, for Selected Cut Flower Species, in the 1978-1980 Market Price Survey

Species	High Flower Price		Percentage Marketing Margin	Low Flower Price		Percentage Marketing Margin
	\$	Month Occurring		\$	Month Occurring	
<u>Carnations:</u>						
Standard (per bloom)	0.30	February	34.1	0.16	August	45.0
Miniature/spray (per bunch)	3.15	May	33.4	2.57	July	51.0
<u>Chrysanthemums:</u>						
Standard (per bloom)	0.69	February	44.3	0.61	August	52.9
Cushion pompon (per bunch)	2.06	February	35.8	1.70	January	31.9
Assorted pompon (per bunch)	2.32	February	46.3	2.07	January	47.2
<u>Gladioli</u> (per bunch)	3.08	February	41.6	1.81	August	-- <sup>a</sup>
<u>Roses:</u>						
Hybrid Tea (per bloom)	1.05	February	50.2	0.46	July	56.7
Sweetheart/miniature (per bloom)	0.52	February	50.8	0.24	July	50.5

<sup>a</sup>Not calculated because of the aberrations in the data for the low price.

Table 5-15. Summary of Average Shipping Point and Wholesale Market Prices, Average Wholesale Marketing Margins and the Percentage of the Average Wholesale Market Price That Equals the Average Wholesale Marketing Margin, for Selected Cut Flower Species, in the 1978-1980 Market Price Survey

Species	Average Prices		Average Wholesale Marketing Margin	Average Wholesale Marketing Margin as a Percentage of Average Wholesale Market Price
	Shipping Points	Wholesale Markets		
----- (dollars) -----				
Carnations:				
Standard (per bloom)	0.13	0.20	0.076	38.0
Miniature/spray (per bunch)	1.83	2.82	0.994	35.2
Chrysanthemums:				
Standard (per bunch)	0.33	0.64	0.309	48.3
Cushion pompon (per bunch)	1.21	1.85	0.645	34.9
Assorted pompon (per bunch)	1.08	2.18	1.108	50.8
Gladioli (per bunch)	1.84 <sup>a</sup>	2.68/2.88 <sup>b</sup>	1.037	36.0
Roses:				
Hybrid tea (per bloom)	0.30	0.64	0.332	51.9
Sweetheart/miniature (per bloom)	0.17	0.33	0.156	47.3

<sup>a</sup>Excludes July-September period.

<sup>b</sup>Twelve month and nine month averages, respectively. Twelve month average is accurate for observed market prices. Market margin and percentage market margin are based on nine month average, however.

marketing margins below the average. The nature of the various species may justify the higher or lower marketing margins in each case.

### Retail Prices

Retail prices for flower arrangements over the years have, not surprisingly, increased over time. Also not surprising is the fact that retail cut flower arrangement prices have not always kept up with inflation. One indication of the trend may be the average wire service order. Table 5-16 shows the average value of outgoing Florists' Transworld Delivery Association (wire service) orders from 1929-1978. In addition, the Consumer Price Index and the deflated average FTD order value are shown. It can be seen that no decrease in average nominal value has occurred since 1950. However, the real average price has shown a decline over the period.

Retail prices in the industry probably vary with the wholesale prices to a certain extent, although extensive data, of the kind similar to USDA Market News price summaries, are non-existent. Yet, some surveys have indicated that retail prices fluctuate as well. Florist magazine (June, 1981), a publication of the Florists' Transworld Delivery Association, surveyed samples of retail florists in Boston, New York, Chicago, St. Louis, Dallas and San Francisco during the weeks of January 25, February 8 and March 8, 1981, to accompany an article by Cathy C. Zeller. They found that retail florists' prices increased 34 percent between the weeks of January 25 and February 8, corresponding to the period immediately preceding Valentine's Day. Prices then declined 44 percent during the month following Valentine's Day. At the same time they found that wholesale prices rose 65 percent before Valentine's Day

Table 5-16. Average Value of Florists' Transworld Delivery Association (FTD) Outgoing Orders, 1929-1978, as Compared with the Consumer Price Index

Year	Average Value (\$)		Consumer Price Index <sup>a</sup>
	Nominal	Real	
1929	5.70	11.11	51.3
1930	5.38	10.76	50.0
1931	4.95	10.86	45.6
1932	4.40	10.76	40.9
1933	3.85	9.92	38.8
1934	3.85	9.60	40.1
1935	3.81	9.27	41.1
1936	3.81	9.18	41.5
1937	3.88	9.02	43.0
1938	3.85	9.12	42.2
1939	3.80	9.13	41.6
1940	3.77	8.98	42.0
1941	3.76	8.53	44.1
1942	3.86	7.91	48.8
1943	4.41	8.51	51.8
1944	5.37	10.19	52.7
1945	6.11	11.34	53.9
1946	6.76	11.56	58.5
1947	6.89	10.30	66.9
1948	6.95	9.64	72.1
1949	6.91	9.68	71.4
1950	6.74	9.35	72.1
1951	6.81	8.75	77.8
1952	7.15	8.99	79.5
1953	7.27	9.08	80.1

Table 5-16. Continued

Year	Average Value (\$)		Consumer Price Index <sup>a</sup>
	Nominal	Real	
1954	7.30	9.07	80.5
1955	7.38	9.20	80.2
1956	7.49	9.20	81.4
1957	7.60	9.02	84.3
1958	7.66	8.85	86.6
1959	7.75	8.88	87.3
1960	7.90	8.91	88.7
1961	8.06	9.00	89.6
1962	8.33	9.19	90.6
1963	8.48	9.25	91.7
1964	8.58	9.24	92.9
1965	8.76	9.27	94.5
1966	9.03	9.29	97.2
1967	9.38	9.38	100.0
1968	10.06	9.65	104.2
1969	10.55	9.61	109.8
1970	10.95	9.42	116.3
1971	11.34	9.35	121.3
1972	11.82	9.43	125.3
1973	12.46	9.36	133.1
1974	13.42	9.09	147.7
1975	14.19	8.80	161.2
1976	14.94	8.76	170.5
1977	15.79	8.70	181.5
1978	16.83	8.61	195.4

<sup>a</sup>Real average price deflated by Consumer Price Index (1967 = 100).

SOURCE: Fossum [1979] for nominal average FTD wire service price and Consumer Price Index.



and then declined 143 percent following the holiday [Zeller, 1981]. (As amounts cannot decrease more than 100 percent and still be positive prices, there is obviously an error here. The conclusions should have been that retail prices fell 30.6 percent and wholesale prices dropped 58.8 percent during the month following the holiday.) The facts suggest that retail prices move with wholesale prices, up and down. To a certain extent, the retailers in this survey tended to restrain the movement of the prices they charge, in relation to the wholesale price fluctuations.

On another vein is the question of retail marketing margins. Here (as with wholesale marketing margins), a marketing margin would include all shipping, handling, service and associated marketing costs needed to take a product from one stage of the distribution system to the next. The retail marketing margin considers the product as it moves from wholesale to the consumer. At retail, a lot more happens to cut flowers than at wholesale; this is, perhaps, different than for most manufactured products, but it is not that different for many service industries. The retail marketing margin for cut flowers, then, would include all costs associated with design, containers, floral foam and other floral accessories, etc., that are involved in transforming flowers as bought at wholesale into flowers as sold at retail. Furthermore, all costs associated with the maintenance of a retail business (e.g., overhead, salaries, profits, etc.) must be "built" into the retail price charged; hence, these are included in the retail marketing margin as well.

The Zeller [1981] article in Florist magazine suggested that the retail marketing margin for one dozen long-stemmed red roses comprised

73.4 percent, 67.2 percent and 80.5 percent of the retail prices during the weeks of January 25, February 8 and March 8, respectively. This, too, confirms that retailers in this survey absorbed some of the wholesale price increases associated with roses on Valentine's Day.

To try to confirm the realm of these figures over time, data collected in association with test orders conducted by Florists' Transworld Delivery Association (FTD) were analyzed [FTD, 1981]. FTD regularly spot checks randomly selected florist members to test whether they supply arrangements in response to wire service orders which can be considered of full value. Arrangements are delivered and checked as to whether or not they correspond in value to prices quoted by the particular flower shop involved over the telephone. Other areas of concern address the fulfillment of FTD member requirements about the handling of wire service orders.

Price quotes for three cut flower commodities were gleaned from test orders conducted in 1978-1980 in cities where wholesale market prices are regularly surveyed by the USDA Market News Service. Retail price quotes were compared with wholesale market price quotes for standard carnations, hybrid tea roses and sweetheart roses. All of the test orders were conducted during the months of April, May, August, September, October and November and were confined to cities of Boston, Chicago, Dallas/Ft. Worth, Milwaukee, Philadelphia, Pittsburgh and St. Louis. Retail marketing margins were calculated by, first, averaging the retail price per dozen flowers arranged for any city's florists surveyed in the same week and, then, comparing it with the wholesale market price average for the highest grade flower of that species for the week. A retail marketing margin, used only as a percentage of the

retail price, was then calculated. Percentage retail marketing margins were used to eliminate bias associated with different cities, time periods or years of the survey.

It should be noted that the differential in prices observed at retail and wholesale markets at a similar time period technically denotes a retail price spread. Unless the product sold at retail is the same as that sold at wholesale, one officially does not observe a retail marketing margin. Yet, the facts that cut flowers are a highly perishable product and that the retail and wholesale prices were both observed during the same week and in the same city (hence, no long distance travel is required) suggest that the values calculated do in fact approach a true retail marketing margin.

Using the data of over 300 retail florists surveyed, it was found that retailers, over the period, had a weighted average retail marketing margin (weighted by the number of florists surveyed in any city on any week) of 83.0 percent, 79.5 percent and 75.0 percent of the retail prices for standard carnations, sweetheart roses and hybrid tea roses, respectively.

Finally, a total weighted retail marketing margin across all three species was calculated. The resulting figure of 79.2 percent tends to confirm the data from the Zeller [1981] article. It is worth noting that all subsets of the data, whether subdivided by city, week or species, fell within the range of 65 percent to 91 percent for a retail marketing margin. Furthermore, over 92 percent of the observations fell within 10 percentage points of the 79.2 percent average retail marketing margin.

If both these experimental results and the results of the Zeller [1981] article can be extrapolated to be consistent with industry trends, it suggests that over three-fourths of the price that consumers pay for flowers in a traditional retail flower shop is for the various services and associated products used to market the flowers. This also suggests that florists are generally marking up "flowers" over four times what is paid for them at wholesale, in order to cover these associated marketing costs, as well as overhead, industry return on investment, salaries, profits, etc.

In 1977, Alvi Voigt surveyed 47 retail florists in Pennsylvania. He found that the average cost of goods sold for the cooperating florists varied from an average 39.6 percent to an average 52.4 percent, depending on the size of the florist and whether or not the business maintained a greenhouse [Voigt, 1978]. Data from the 1980 FTD member census places cost of goods sold for 787 florists surveyed at a median 44.2 percent of sales [FTD, 1982c]. When speaking of a retail marketing margin for cut flowers, one would include costs of containers and other accessories in the marketing margin. When speaking of sales and cost of goods sold, however, the cost of containers and accessories is included in the cost of goods sold. Hence, this information tends to leave a 79.2 percent retail marketing margin well within the realm of possibility, as the cost of goods sold necessarily (by definition) falls below the marketing margin.

Another area of consideration for retail prices must be those of the flowers moved through non-traditional outlets. Mass marketers and roadside stands typically sell cut flowers for less than the traditional outlets. They also sell flowers with fewer services involved.

Single flowers, bouquets of one flower type and mixed bouquets are the chief items usually found in such outlets. The reported gross margin at such outlets ranges from 35 to 50 percent [Kress, 1976b]. Yet, there is, perhaps, more to be examined here.

Many mass marketers, especially those which are members of large chains, acquire, because of the volumes purchased, enormous buying power. This purchasing power often enables chain buyers to bypass local wholesalers. In some cases, chains buy directly from growers or import centers. The result may mean flowers get acquired at less than the average wholesale prices charged local traditional retail florists. Some mass marketers also have concentrated their floral efforts in buying flowers which may be shorter stemmed or different in other ways than what is traditionally purchased by retail florists. These factors, combined with the lower gross margins, often result in prices at these non-traditional outlets being considerably lower than those found in the full-service traditional florist shops, i.e., lower than just the lower gross margin would, itself, indicate.

Some of the hypotheses in Chapter II offer some insight to the grower-mass market relationship. Hypothesis H14 suggests that a tightly coordinated subsector structure, such as that in effect in most super-market chain systems, tends to experience lower costs per unit of output and hence often charges consumers lower prices. Hypothesis H24 advises that the primary goal of firms in contracting for the sale of their output, here grower establishments, is the reduction of market and price uncertainties. Their interest in contracting is positively related to their level of specialization and past variability of product prices. Hypothesis H25 responds that the primary goal of firms in contracting

for input supply, here mass marketing enterprises, is to gain sufficient control over quantity, quality and the delivery schedule of inputs to assure efficient plant operations and the ability to satisfy market operations. Since entering the floral business, mass marketers have regularly contracted for supply, often up to six months or a year ahead of need. This is something never before practiced in the industry by the traditional participants. As such, one should expect that the efficiencies gained from well coordinated operations and better supply controls should further reduce marketing margins and, hence, prices in the mass market retail sector.

#### Charges of Associated Services

Cut flower (arrangement) prices are not the only charges greeting some consumers at the cash register, however. Unlike the general trend of previous times, today most florists charge additional amounts for some of the services previously included in the price of an arrangement. Service charges and delivery charges are now common throughout the industry. In addition, a person sending a wire service order often faces additional charges and restrictions associated with his or her request for an arrangement.

Delivery charges today are to be expected. The FTD Flower Business Fact Books indicate that, by 1975, 59.8 percent of single shop florists and 80.4 percent of multi-unit florists were already charging a fee for some or all of their deliveries [FTD, 1977]. In 1980, 82 percent of single shop florists and 92 percent of multi-unit florists charged extra for delivery [FTD, 1982c]. However, delivery charges and restrictions vary widely. Some florists, in 1975, made delivery of orders above a

certain amount free of charge (57 percent of florists surveyed) [FTD, 1977]; by 1980, however, this category had dropped to include only 34 percent of those surveyed [FTD, 1982c]. Some orders for certain occasions, e.g., funerals, weddings, etc., were delivered without charge (56 percent of florists surveyed), and deliveries to regular stops, such as hospitals and funeral homes, were made without charge by 41 percent of the florists surveyed in 1975 [FTD, 1977]. By 1980, 66 percent of those surveyed delivered free for certain occasions, while 41 percent still delivered free to regular stops [FTD, 1982c].

Delivery pools in several cities are also affecting this service. In many cities, florists have banded together to deliver each others' orders, with each florist making deliveries to a specified section of the city. Hence, a flower arrangement may often be delivered by a florist other than the one responsible for the design itself. In another variation of the pool delivery scheme, some florists have concentrated or formed a private delivery service to deliver all orders for all pool delivery members.

Delivery charges today vary widely. During the visits made by this author to various retail establishments around the country in 1981, delivery charges were found to vary from \$0.50 to \$5.00. In some instances, delivery was not offered at any price. (In other cases, phone orders, which result in delivery, dominate. Over 85 percent of one shop's business was estimated to come from such phone orders.) One florist even had an elaborate deliver charge system based on seven concentric circles with seven accompanying prices, drawn on a map around the shop's location. Charges in this case varied from \$1.50 to \$5.00.

Other service charges also occasionally are added to floral orders. With wire service orders, it is not unusual for an order to be accompanied by a transmission or phone charge, a delivery charge and a service charge, as well as sales tax. Furthermore, wire service orders to many florists often have specified minimums. Minimums to some cities or florists may be as high as \$25.00 or more. Even on local orders, it is not unusual for certain pieces or occasions to have associated minimums; this is especially true for wedding work or similar corsage work, etc. Service charges for credit card or in-house credit are also not unheard of.

Another perhaps unexpected feature occurs in some large cities with heavy traffic problems. Florists have reportedly called other retailers, across town, to ask them to fill their orders, rather than face the transportation headaches. In this fashion, even orders for destinations within the same city can take on all characteristics, including added service charges as they apply, of wire service orders. Apparently traffic problems, as well as the higher fuel and associated labor costs, have had an added effect on charges made for floral services.

Another aspect of service charges that should be reviewed is how wire service associations account for their role in conducting wire service business. This becomes especially important when one considers that, according to the FTD Flower Business Fact Book, 13 percent of the total sales of the average FTD retail florist involved outgoing FTD wire service orders [FTD, 1977]. (As many florists belong to more than one wire service, the percentage of the sales that involve all wire services may be higher.) While not necessarily consistent with procedures for



all associations, the FTD Flower Business Fact Book gives a clue as to how the Florists' Transworld Delivery Association, the largest wire service, operates.

For all FTD wire service orders, the originating florist gets to keep 20 percent of the price of the item ordered as a commission, as well as any transmission/phone charges, other service charges made and sales taxes. The filling florist, via the association's clearinghouse network, receives 75 percent of the price of the item ordered, but is required to fill the order at 100 percent of face value (FTD, as previously mentioned, operates an extensive series of test orders to try to insure that all members operate consistently with this requirement) plus any delivery fees. The remaining 5 percent of the face value goes to FTD, 4.25 percent to cover advertising and related promotional expenses and 0.75 percent to cover clearinghouse expenses.

### Summary

This chapter analyzed the consumption of derived cut flower products, elasticities of demand and commodity price patterns. Initially, this chapter provided insight into the factors affecting cut flower arrangements. Efforts were made to spotlight the various occasions for which cut flowers and cut flower arrangements are used and to list specific commodities which often compete in the marketplace with fresh cut flowers.

Extensive efforts were made to try to analyze the price elasticities of demand for this commodity subsector. A two-tiered approach, looking at (a) retail cut flower arrangement demand and (b) wholesale demand of specific (major) cut flower species, was used. Results of the

cut flower arrangement research were such that only factors affecting retail cut flower arrangement consumption and a general hypothesis as to the inelastic nature for most cut flower arrangement use, were discovered. The analysis of specific cut flower species demand at the wholesale level yielded estimated flexibility coefficients for all the major species examined, except for hybrid tea roses.

The next section of this chapter focused on commodity price patterns. Reports of data analyses from a three year averaging of monthly shipping point and wholesale market price movements for various species were provided. Similar information was sketched for retail cut flower arrangements and associated services. The end result was a discovery of estimated wholesale and retail margins.

Next, Chapter VI will present the details of the organization of the cut flower subsector. Production and marketing channels, the structure and characteristics of the buying and selling industries at each level in the subsector and the coordinating mechanisms within the cut flower subsector will be discussed.

## CHAPTER VI SUBSECTOR ORGANIZATION

The flowers that are bought or received by final consumers begin their journey to the retailer long before the final sale occurs. The journey may begin with the seed grower in Lompoc, California, in Guatemala, in Panama or elsewhere. If the seed is of a new variety, the journey of the specific cut flower may begin even earlier in a breeder's greenhouse, laboratory or field trial. Or the journey for most flowers, it may be suggested, begins with a grower or plantsman who takes hope-fully aseptic stem cuttings, pares them down to their apical meristems and, through tissue culture, regenerates each meristem into a group of identical virus free plants. In fact, the journey of the end cut flower may begin with any of these starts or with others, depending on the variety, species or grower involved.

This chapter will attempt to trace the flow of cut flower product from its inception, through marketing channels and to the final consumer. The discussion of this subsector's organization will include a review of the production and marketing channels and an overview of the buying and selling industries at each level. Coordination mechanisms will also be addressed.

## Production and Marketing Channels

### An Overview

The start. The production and marketing channels begin with the seed or plant. While Mother Nature and plant breeders rightfully belong at the beginning of the production chain, at least for varietal inception, the majority of plant material can be said to originate via seed, cutting and plant suppliers. For some species, a grower may buy a seed, plant or cutting to raise stock plants from which other cuttings will be procured in the future. This grower may use the cuttings for his own plant beds, or he may sell the cuttings, either callused or rooted, to other growers or intermediaries. Other species are easily propagated from seed and are usually started by final growers. However, there are some firms which specialize in propagating seedlings for other growers. In either the case of cuttings or seedlings, much of the ordering is done either on a contractual basis or with sufficient lead time such that plants or cuttings are not typically inventoried but are cultivated for specific orders.

Flowers raised from bulbs, corms or tubers may have a somewhat specialized distribution system. In many cases, specialized growers raise bulblets, cormlets and small tubers of new varieties until they are of blooming size. The resulting (large) bulbs, corms and tubers are sold to cut flower growers, who often continue any required propagation efforts as part of their own operations, as many species readily produce progeny during their normal growing seasons. Supplementary supplies, as needed, and supplies for smaller or less specialized growers, can be

procured from either normal floricultural suppliers or from specialized growers.

For other species, seed may be the typical fare. Yet, the seed that the cut flower grower receives has often travelled through middlemen who have ordered their supplies from seedsmen. These seedsmen, in turn, may have contracted their seed inputs from growers all around the world.

Alternatively, the seed suppliers often take the form of large national or international firms with regional sales representatives; these firms often sell everything from seed to soil additives to greenhouse supplies. Such firms may be equally involved in sales of seeds, seedlings and cuttings. Often this end seed/seedling/cuttings supplier is the same firm that was involved in the original breeding program of the variety being sold.

The grower. The seeds, seedlings, plants or cuttings (or bulbs, corms, or tubers) finally make their way to the estimated 3,900 commercial cut flower farms in the U.S. [U.S. Bureau of Census, 1979 Census of Horticultural Specialties, 1982] or to foreign growers. They may be raised for stock, which the growers will maintain for cuttings, or they may be planted directly in beds for the raising of cut flower crops. If for stock, cuttings will periodically be taken and propagated, usually in a separate propagating area, and then planted in beds for the cut flower crops.

Crops are either raised as a single crop, as with chrysanthemums, or as part of a multi-cropping sequence, as is the norm for roses and carnations. The grower's decisions on crops and cropping sequences are

just the first to affect his eventual harvest; however, many of his crop management techniques will also influence the post-harvest longevity of the flowers. Use of growth retardants, for instance, may play a role in determining flower and foliage color, the visible injuries of air pollutants and flowering time. Foliar abscission may also be slowed by the application of growth retardants. Other crop management techniques may influence the susceptibility to chilling injury or the lasting quality of flowers once harvested [Sullivan et al., 1980, pp. 406-413].

If a market exists for the crop, the flowers are cut when nearing or at the blooming stage, depending on the species, variety or grower. Carnations in Colorado, for example, are usually cut at the full-bloom stage. The same crop raised in South America is usually cut and shipped with at most only minimal color showing. Gladioli are always shipped with only the least hint of color apparent, while most orchid species reach the full-bloom stage before they are cut. Technology changes have even varied these procedures in recent years, as research in post-harvest physiology has suggested alternative harvesting and handling procedures for various crops. Economies associated with shipping tight buds relative to marketing fully blossomed flowers also affect decisions here. Such technicalities must be carefully investigated and remain at the forefront of a grower's working knowledge.

Post-harvest handling also begins at the grower level and this, too, can involve many particulars. Depending on the crop or grower, cut flowers may be given an initial drink of water, graded and then be placed back into water (e.g., roses), graded and packaged and then given their initial watering (e.g., Marguerite daisies) or packaged and readied for market without ever being watered (e.g., gladioli).

Preservatives are sometimes added to the water, and occasionally a surfactant may also be used to aid with water uptake. Both surfactants and preservatives seem to be used primarily for the higher-valued crops. Most growers refrigerate their crops until shipment. Some tropical species, e.g., orchids, anthuriums, etc., cannot withstand the same refrigeration temperatures as used for roses or carnations, however. Here again, proper handling can require the grower to operate in a very scientific methodological pattern.

The grower must also be a businessman which may require having tremendous flexibility when operating in the marketplace. If market demand is unusually low, for instance, economics may call upon the prudent grower to discard a crop and leave it in the field, bed or greenhouse. Changing tastes and preferences of consumers, retailers and wholesalers may influence the marketability of certain varieties or species, packaging methods and the like. The retail wire service organizations often distribute "want-lists" with different species, colors or varieties needed for upcoming seasonal specials. Furthermore, energy, labor or other growing requirements may necessitate changes in cultural methodologies or crops grown. Such flexibility and the business acumen that is needed for making correct decisions certainly are necessities for the grower's intellectual arsenal.

Growers naturally come in all sizes. The 1979 Census of Horticultural Specialties [U.S. Bureau of the Census, 1982] breaks down the domestic cut flower growing establishments by sales levels. These data are presented in Table 6-1. Unfortunately, due to changes in the enumerating procedures, the Census does not allow for direct comparison of these data with those of previous years. However, there does appear

Table 6-1. Breakdown of Cut Flower Growing Establishments by Sales Levels, 1979

Sales Level	Establishments		Total Sales	
	(Number)	(%)	(\$1,000)	(%)
\$500,000 or more	222	5.7	177,363	50.2
250,000 to 499,999	259	6.7	63,321	17.9
100,000 to 249,999	655	16.8	65,736	18.6
50,000 to 99,999	676	17.3	26,749	7.6
25,000 to 49,999	676	17.3	12,062	3.4
20,000 to 24,999	213	5.5	2,342	0.7
15,000 to 19,999	212	5.4	1,923	0.6
10,000 to 14,999	222	5.7	1,464	0.4
5,000 to 9,999	370	9.5	1,532	0.4
2,000 to 4,999	395	10.1	923	0.3
Total All Establishments	3,900	100.0	353,415	100.0

SOURCE: U.S. Bureau of the Census. Census of Horticultural Specialties [1979].



a trend towards larger farms when considering all horticultural specialties combined [U.S. Bureau of the Census, Census of Horticultural Specialties, 1973, 1982].

Entering the distribution channels. Following their harvest, cut flowers may vary in their route to market. One path is that used by the numerous grower-retailers in the industry; here, product usually moves from the greenhouse bench or bed to the cut flower cooler. Very few of these growers are able to rely on their own production facilities for the satisfaction of all, or even most, of their fresh product inventory needs, however. Few grower sales are made direct to consumers, as 93.5 percent of total domestic grower sales were recorded as wholesale sales [U.S. Bureau of the Census, 1979 Census of Horticultural Specialties, 1982].

On the other hand, for the vast majority of cut flowers, marketing begins with an inventory of supply, where most product, whether domestically or non-domestically produced, travels through supply channels by one of three routes. Flowers typically are either (1) shipped directly to retailers or their agents, (2) sold at wholesale flower markets or (3) sold by traditional wholesalers. First, however, product must enter the supply stream, and this entry varies depending on whether the produce is foreign or domestic.

During periods of favorable market conditions, imported product is frequently sold or is expected to be easily sold before leaving its country or origin. Hence, when the market is weak, imports often drop in number. Imported flowers usually arrive in the U.S. within 24 to 36 hours from cutting. Flowers are typically removed from cargo planes by

customshouse brokers, who keep flowers secured and refrigerated until samples are inspected by the U.S. Animal and Plant Health Inspection Service. Flowers must then clear U.S. Customs, a question usually relating only to tariff collections rather than a second inspection. Refrigeration is maintained until flowers are picked up by the shipper, broker or agent who "imported" them. (This is a welcome change from the not too distant past when flowers often remained on the airport's hot runway apron for hours until inspectors arrived.)

The shippers, brokers and agents, often affiliated with growing firms or grower organizations, market the cut flowers to wholesalers across the country. Sales, typically made by telephone, have often been made even before the flowers land. Flowers are refrigerated and/or precooled and then continue their journey to scattered wholesalers in consolidated loads (from various shippers, brokers and merchants) by refrigerated truck or by bus, plane, train and/or other carrier. Flowers are often shipped from the import centers within at most 48 to 72 hours of being cut.

If flowers are domestically grown, introduction into the marketing system can depend upon the crop and the grower. It can also be influenced by the location of the growers relative to the markets where product is to be shipped. In some cases, growers may be their own shippers, sending produce to distant markets, wholesalers or even retailers (hence, a grower-shipper). Or growers may be referred to as grower-wholesalers if the majority of their clientele is made up of retailers. Still other opportunities exist if a grower operates in the vicinity of an independent broker, shipper or agent who consolidates and then markets the produce of several growers.

These large initial brokers, shippers and agents, operating largely in the domestic growing regions of California, Florida and Denver, Colorado, and near import centers such as Miami, Florida, and Jamaica, New York, are essentially the wholesaler's wholesaler. Whether or not they are directly affiliated with growers or grower organizations, these middlemen, along with large grower-shippers and grower-wholesalers, provide the bulk of cut flower supply to the industry. They tend to handle mainly perishables and seldom get involved with the sales of hard goods that retailers buy from local wholesalers.

One function that currently is being assumed by many of these initial bulk flower handlers is that of promoting proper cut flower care. While not alone in these efforts, the large amount of the product handled at this level of the marketing chain makes any flower care procedures implemented out pay off in a big way. Many of these middlemen have promoted the use of preservatives to their wholesale and retail clients. Some have enclosed samples of preservatives and/or literature about new preservatives and techniques in each box of flowers shipped. New flower life-lengthening methodologies have, in some cases, been developed or introduced by these flower handlers, e.g., the use of silver thiosulfate or related products.

These initial flower handlers sometimes assume the responsibility for removing field heat or airplane and runway heat (in the case of imports) from product before it is shipped to wholesalers. Relatively new "precoolers," so named because they cool down the product before it is shipped, have invaded the industry, most often at this level of the marketing chain [Staby and Robertson, 1982]. Figure 6-1 shows such a precooler as it pulls cool air through "portholes" in specially



Figure 6-1. A Pre-cooler in Operation and a Close-up of the Built-in Portholes in the Boxes (Cold air is pulled through the boxes from the surrounding refrigerated atmosphere.)

designed boxes. It is the large volume of product handled that allows these middlemen to employ such innovative technologies economically.

Movement to wholesalers and retailers. Hence, there is an initial large cut flower supply formed from the merging of product from foreign and domestic sources and the efforts of grower-shippers, grower-wholesalers, brokers, shippers and agents. (The product of the grower-retailer will not be considered here.) This volume typically moves through one of the three previously listed routes, i.e., (1) shipment direct to retailers or their agents, (2) sales through wholesale markets or (3) sales through traditional wholesalers. Figure 6-2 depicts the market channel for this cut flower supply as presently described.

Product that is shipped directly to retailers or their agents usually connotes at least one of two possible cases. In one instance, the grower-shipper, grower-wholesaler, broker, shipper or agent is of sufficient size to afford a direct sales mechanism (e.g., sales persons, offices, billing apparatus, telephones, access to delivery, etc.). In the second case is the retailer who is of sufficient size so as to command product delivery in quantities larger than economically practical for most dealings with local traditional wholesalers. While exceptions do occur, some size on the part of one of these participants is usually involved in most cases of direct shipment. (Growers selling directly to local retailers is the most obvious exception.)

A grower in New England, Portland, Oregon, or California has the opportunity to participate in the second avenue of product movement through the industry. Such growers may rent or be affiliated with a broker, agent or wholesaler who rents space at the Boston, Portland,

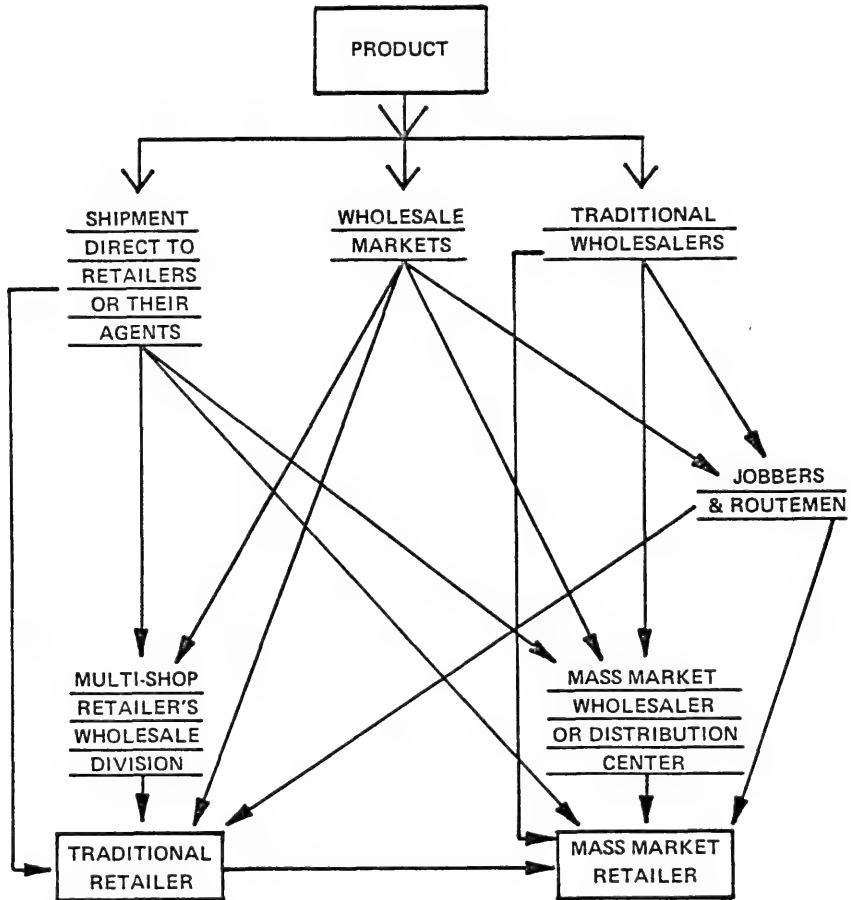


Figure 6-2. Diagram of Market Channels for the Majority of Harvested Cut Flower Supply

San Francisco or Los Angeles flower markets. These wholesale terminal outlets allow retail florists, smaller wholesalers, jobbers and routemen to shop for their merchandise conveniently, as various wholesalers or grower-wholesalers are positioned side by side in a warehouse type building (Figure 6-3). The majority of product in these locations is often that of local growers. However, other merchandise, including some of which is imported from outside the U.S., often merges with locally grown produce at these outlets. Some of the wholesalers at these outlets broker product or act as commission agents for other growers; nevertheless, the vast majority act as traditional merchant wholesalers taking title to and possession of product. Occasionally wholesalers sell hard goods at these markets as well.

The Los Angeles and San Francisco markets are sometimes known as shipping point markets, as they are located in growing and shipping areas. Yet, the way these markets operate is essentially no different than that of other terminal markets (to be discussed below). Prices are generally lower than in other markets due to the presence of nearby supplies and the absence of a large transportation component in product prices. Some sales may also be made to shippers looking to broaden their product lines with other species.

A somewhat similar market arrangement can be found in New York City. Here, the various wholesalers (currently about 25 to 30) all have separate but adjoining storefronts, located in the same two-block area of West 28th Street. New York wholesalers are not typically grower-wholesalers as are many in the other markets, although there may be some exclusive merchandisers for particular growers. Retailers, jobbers or routemen still may shop from wholesaler to wholesaler, as in the

Figure 6-3. View of Part of the Boston Flower Market (Similar warehouse type pictures, where wholesalers rent adjoining spaces, may be seen in the Portland, Los Angeles and San Francisco Flower markets.)





previously described markets. The merchandise is sometimes older than in the other markets, as relatively little of the merchandise is grown nearby; much of it is shipped in from Florida, California and other growing areas. Imported produce from Holland, Israel and others does land in nearby Jamaica, New York (John F. Kennedy Airport), but New York also receives much South American produce, which is usually imported through Miami, Florida, and then trucked northward. New York City's market still has a concentration of wholesalers who sell on consignment, a factor which appears less dominant in other market areas. Most floral wholesalers around the country now take title to the goods they sell.

The Portland, Oregon, flower market only has one cut flower grower still among the operators in the marketplace. Historically, many more cut flower growers were among the group of wholesalers in the market, but over time the mix has evolved to include mostly potted plant growers. There are three traditional cut flower wholesalers located in separate facilities in the neighborhood adjacent to the market, however.

The only other somewhat comparable wholesale flower markets are the Empire State Flower and Plant Auction on Long Island, New York, and the San Diego County Flower Auction in Encinitas, California. These relatively new markets have been organized in a fashion similar to a Dutch flower auction, complete with auction clocks and bidders' galleries. On Long Island, growers of foliage, bedding and potted flowering plants (and a few large wholesalers offering cut flower supplies) bring their merchandise, and retailers and smaller wholesalers, jobbers and routemen bid on it. This particular auction remains largely plant oriented, often with no cut flower sales activity present.

The closest the U.S. has to the true Dutch auction concept (sales by growers with most purchases by wholesalers, brokers and shippers) appears at the San Diego auction market. This recently established market is still having trouble attracting enough merchandise; as a result, this market has not yet attracted all of that area's larger industry buyers. Unlike the Dutch auctions of Europe, retailers still provide a considerable share of the purchases in San Diego. Other groups have discussed the possible establishment of such markets as well. If developed in the U.S., these markets would probably first be formed in areas with large concentrations of growers.

Hypothesis H28 of Chapter II suggests that producer collective action to coordinate production and marketing will occur where (a) production is geographically concentrated, (b) producers are highly dependent on their production as their major income stream, (c) there is limited flexibility of resource use in the short run, (d) growers face a limited number of buyers, (e) there is a perishable product and (f) there are perceived inequities in risks, responsibilities and returns between producers and buyers. These characteristics are at least partially evident in the Los Angeles, San Francisco, San Diego, Boston and Long Island areas, where growers' markets are already existent. Other areas, especially some in California, also exhibit these characteristics.

In other large cities, various wholesalers offer both locally grown merchandise and shipped-in product to retailers. In most cases, the vast majority of the merchandise has been purchased by wholesalers from grower-shippers, shippers, brokers or agents in distant cities or growing areas. The cities of Chicago, Dallas/Ft. Worth, Philadelphia,

Pittsburg, Minneapolis/St. Paul, Milwaukee and St. Louis are each homes to several wholesalers and, hence, are recognized as the other major cut flower terminal markets (i.e., in addition to New York, Boston, Los Angeles and San Francisco). In these cities, wholesalers have separate storefronts and may be located across town from one another. In Chicago, for instance, there is a branch unit of Vans, Inc. next door to Kennicott Brothers on Randolph Street; yet other Chicago wholesalers are blocks away or even in the Chicago suburbs. Except for the larger volume handled due to city size, these wholesalers for the most part fit the mold of the traditional wholesaler introduced below.

The third avenue of product movement in the industry is the traditional wholesaler. Smaller cities and towns may have only a few wholesalers selling to retail florists. In smaller towns, wholesalers may not even have local competition except from shipped-in merchandise or firms operating delivery routes from distant cities. These traditional wholesalers are the backbone of the distribution system for the cut flower industry; they provide the perishable merchandise to the majority of retail florists. They are positioned at the end of the trucking routes from growing areas and import centers.

Finally, there exists another middleman who services the retailers in distant, mostly rural towns and villages--the jobbers and routemen. These middlemen typically purchase their product from wholesale markets or traditional wholesalers; however, small growers, who might be likened to hobbyists, sometimes provide small portions of the jobber's or routeman's merchandise. In some cases, these middlemen sell on consignment for wholesalers, and their line is almost always limited to major

varieties, seasonal specials (e.g., bulb crops) and, perhaps, hard good supplies.

The wholesaler. The 1977 Census of Wholesale Trade [U.S. Bureau of the Census, 1979] states that in 1977 there were 3,814 establishments that had any wholesale trade involving "flowers and florists' supplies." These businesses had \$2,076,983,000 in sales. However of the 3,814 firms, only 3,143 had flowers and florists' supplies as a major part of their business, and only 2,459 firms were classified as "true" flower and florists' supplies wholesalers. These 2,459 firms accounted for \$1,954,163,000 in sales, over 94 percent of the total flower and florists' supplies wholesale sales reported. (Most of the other firms had less than 1.5 percent of their sales relating to flowers and florists' supplies.)

Of the 2,459 floral wholesalers, the 1977 Census of Wholesale Trade [U.S. Bureau of the Census, 1979] considers 2,333 firms merchant wholesalers; the remaining 136 firms were classified as agents, brokers or commission merchants. This compares with 2,171 wholesale dealers reported in the 1972 Census of Wholesale Trade [U.S. Bureau of the Census, 1976], 1,974 of which were merchant wholesalers (doing \$923,773,000 in sales). The remaining 197 firms were agents, brokers or commission merchants (doing \$356,608,000 in sales). Obviously, the wholesale industry is moving away from agents, brokers and commission merchants and towards merchant wholesalers.

Yet, the numbers alone do not tell all of the story. Sullivan *et al.* [1980, p. 53] maintain that the number of wholesalers is declining and that the average firm is increasing in size. While the

wholesale census data belie this statement, the trend suggested by Sullivan et al. may be very apparent in many markets. The New York City terminal market has, for instance, seen many firms exit the industry; others are expected to follow (Appendix A). However, many wholesale firms have opened in less concentrated areas. Many smaller cities now can claim wholesale firms where none existed before. The role of the jobber and routeman has taken on new importance in many rural areas. These too are included in the Census tallies.

The Census defines merchant wholesalers to include wholesale merchants or jobbers, drop shippers, retailer cooperative warehouses and cooperative buying associations which take title to the goods they sell and which are primarily engaged in buying and selling merchandise on account. Agents, merchandise or commodity brokers and commission merchants, on the other hand, are said to be primarily engaged in the wholesale distribution of goods for others. Agents often buy or sell merchandise for foreign or non-local firms. Brokers buy or sell on a brokerage basis but do not receive goods on consignment. And commission merchants buy or sell goods which they receive on consignment [U.S. Bureau of the Census, 1977 Census of Wholesale Trade, 1979].

The 1977 Census of Wholesale Trade offers other information about the sales of the 2,333 merchant wholesalers. In 1977, these operators accounted for \$1,671,092,000 in sales. They made 66.1 percent of their sales to retailers, 23.3 percent to other wholesalers and 6.1 percent to institutional, commercial, industrial or professional users. The remaining sales went to farmers (1.7 percent), to household consumers (1.3 percent), for export (0.7 percent), to federal, state and local governments (0.5 percent) and to builders (0.3 percent). These data are



summarized in Figure 6-4. Table 6-2 breaks down the 2,083 merchant wholesalers who operated for the entire census year, by their sales levels. Agents, brokers and commission merchants accounted for \$283,071,000 in sales; a breakdown of their sales by customer class or by sales level is not available, however [U.S. Bureau of the Census, 1977 Census of Wholesale Trade, 1979].

According to the Census, the wholesale flower and florists' supplies trade employed 24,282 persons in 1977. The breakdown of employment, which is fairly consistent between merchant wholesalers and agents, brokers and commission merchants, gives some indication as to how the wholesale sector operates. Table 6-3 shows that the major employment area is for inside sales personnel, office and clerical employees, outside sales employees, administrative employees and others [U.S. Bureau of the Census, 1977 Census of Wholesale Trade, 1979].

The functions of the average wholesaler usually fall into two main categories, credit and product handling. Wholesalers often offer credit to retailers for merchandise sold, and, occasionally, they have been known to make investment loans to growers (for expansion purposes, etc.) in exchange for a promise of future supply. It is the former credit, rather than the latter investment loans, for which wholesalers are most widely known. This provision by wholesalers of providing credit for merchandise purchased by retailers also allows growers to transfer their product without assuming a retail credit function.

Wholesalers serve a product handling function which caters to the needs of both their retail clients and their grower suppliers. Product procurement (often including the gathering of supplies, plants and dried and silk flowers in addition to fresh cut flowers), inventorying, pickup

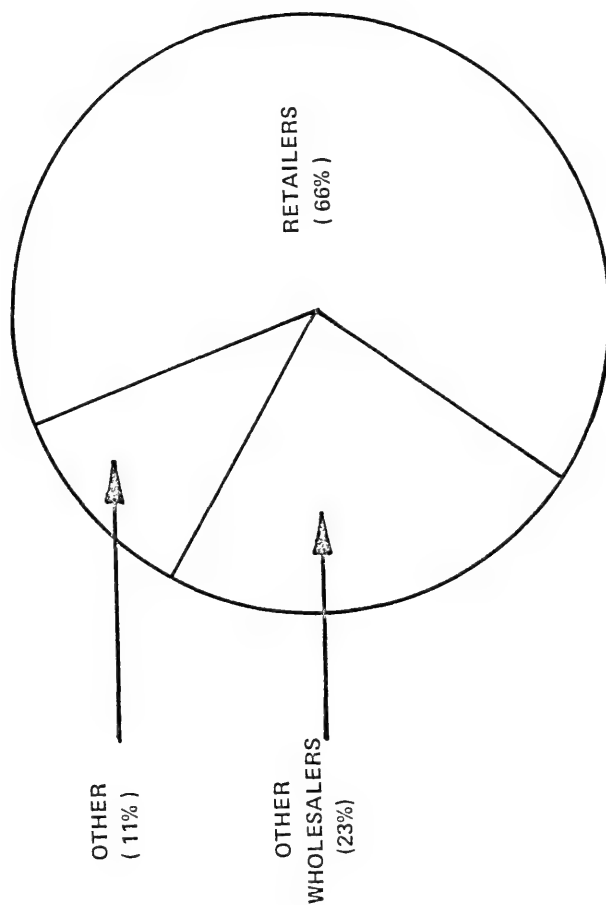


Figure 6-4. Breakdown of Sales of Merchant Wholesale Florists

SOURCE: U.S. Bureau of the Census, Census of Wholesale Trade [1977].



Table 6-2. Breakdown of Merchant Wholesalers Operating Entire Year by Sales Level, 1977

Sales Level	Establishments		Total Sales	
	(Number)	(%)	(\$1,000)	(%)
Over \$5,000,000	27	1.3	304,056	18.8
2,000,000 to 4,999,999	126	6.0	381,068	23.5
500,000 to 1,999,999	697	33.5	681,559	42.1
200,000 to 499,999	567	27.2	188,620	11.6
100,000 to 199,999	311	14.9	45,627	2.8
Less than 100,000	355	17.0	18,874	1.2
Total All Establishments	2,083	100.0	1,619,804	100.0

SOURCE: U.S. Bureau of the Census, 1977 Census of Wholesale Trade [1979].

Table 6-3. Employment, by Principal Activity, of 1977 Flower and Florists' Supplies Wholesale Trade Employees

	Merchant Wholesalers	Agents, Brokers and Commission Merchants	Wholesale Trade Total
Number of Establishments	2,333	126	2,459
Sales Level (\$1,000)	1,671,092	238,071	1,954,163
Total Persons Employed	23,065	1,217	24,282
<u>Persons Employed as Follows:</u>			
Inside selling employees	5,511	268	5,779
Warehousing employees	4,304	330	4,634
Office and clerical employees	3,460	224	3,684
Outside selling employees	2,464	112	2,576
Administrative employees	2,064	106	2,170
Manufacturing employees	911	4	915
Other employees	4,351	173	4,524

SOURCE: U.S. Bureau of the Census, 1977 Census of Wholesale Trade [1979].

(from growers) and delivery (to retailers) and some product care functions (such as forcing, acclimating (plants) and reconditioning) all are part of this product handling function. Efficiencies benefiting retail clients may also be accrued from the wholesaler purchasing in quantities larger than the average retail florist can handle, selling in lot sizes easily used by retailers and obtaining a broad spectrum of product.

Other functions are also occasionally assumed by wholesalers. Some wholesalers have assisted retailers by sponsoring industry-wide advertising or cooperative advertising among their retail clients or by supplying other promotional tools such as point-of-purchase materials. Wholesalers sometimes are called upon to sponsor design schools or classes for their clients' employees.

Distribution centers of multi-unit retailers. Typically, the next market channel participant is the retailer; however, if the firm is a large multi-shop establishment, an almost separate (and often in-house) intermediary is frequently set up that might correspond more closely to a traditional wholesale florist. Some multi-unit firms such as Bachman's, Inc., of Minneapolis/St. Paul or Giant Foods, Inc., of the Maryland, Virginia and Washington, DC area essentially run separate wholesale divisions or distribution centers to process incoming flowers and distribute them to their various units. Such centers usually purchase product directly from growers, grower-shippers or large terminal wholesale markets. Some supplemental purchases may be made from local traditional floral wholesalers by these distribution centers; this can be problematic, however, as these retailers may face hostility from

wholesalers due to their usual bypassing of the more typical distribution system.

While current data on the number of these multi-shop-retailer wholesale divisions or distribution centers are not available, some industry information suggests that the potential for substantial growth in their numbers does exist. In 1980, FTD found 844 multi-shop ownerships among its members. This represented 7.9 percent of all ownerships, up from 3.7 percent of ownerships in 1970 (357 firms) and 4.2 percent of ownerships (411 firms) in 1975. The average multi-shop ownership had 2.4 shops under the same direction in 1980 [FTD, 1982c]. The 1977 Census of Retail Trade [U.S. Bureau of the Census, 1979] reported that there were 564 multi-unit firms in 1977 (about 2 percent of all florists); of these, 174 were for firms with more than two shops. There were 13 firms with 6 to 10 shops, and seven firms had 11 or more shops. While the growth in multi-unit firms does not necessarily imply a growth in firms which operate their own wholesale divisions, the latter may become a necessity for many firms if horizontal integration continues.

Data from a 1978 study by George Kress on supermarket floral merchandising suggest that over 46 percent of the firms that were currently handling cut flowers were planning to increase their involvement. Only 1 percent thought a decrease in involvement was in order [Kress, 1979]. In 1982, 56 percent of those surveyed claimed satisfaction and 55 percent of the total surveyed planned increased involvement in the future [Kress et al., 1983]. This enthusiasm, coupled with the tremendous potential growth (as only 50 percent of firms surveyed which were handling floricultural products were even

handling cut flowers on a regular or seasonal basis [Kress et al., 1983]), suggests that there may be many more mass market firms carrying cut flowers in the future. In 1979, there were 492 chain distribution centers for supermarket chain stores and 1,573 independent grocery warehouses serving the grocery industry. All of these could eventually be called upon to service the 33,600 independent and chain supermarkets (sales over \$1 million per year) in the U.S. [Anonymous, 1980], if the mass marketing of cut flowers increases. In 1979, Kress found that only 18.1 percent of the supermarket firms surveyed (which carry floral items) had central warehouse facilities for flowers [Kress, 1979].

The retailer. Eventually, growers, brokers, shippers and wholesalers do get their flowers to retailers. While additional data as to the exact proportions of product which travel by various avenues for the traditional retail industry are lacking, such data do exist for the mass marketers. The 1978 Kress study polled mass marketers as to the source of their product. In the cut flower area, 36.8 percent of supermarket retailers relied on local growers for product, while 33.8 percent bought from wholesale florists. In addition, out-of-state growers, local florists and others were cited as product sources by 19.1 percent, 5.9 percent and 4.4 percent, respectively [Kress, 1979].

By 1982, the dependence by supermarket retailers on local growers for cut flower supplies had declined to 25.8 percent of those surveyed, while out-of-state growers were used as the product source by 26.9 percent. Mass marketers used wholesalers or local florists for their product source in 34.4 percent of the instances. Brokers, foreign suppliers and others were cited as sources by 5.4 percent, 2.2 percent

and 5.4 percent, respectively [Kress et al., 1983]. These data are depicted in Figure 6-5.

The dominance of local growers in 1978 may at first seem surprising. However, when one considers that the mass marketing of cut flowers was initially most evident in areas which still have large growing sectors, e.g., California, Florida and Colorado, the curiosity may be arrested. Furthermore, as mass market involvement in floriculture typically begins with potted plants and bedding plants for most operators and as local growers dominate as suppliers for these product categories, it is likely that mass marketers frequently ask their primary suppliers for assistance as their interests expand. Figure 6-5 shows that as more supermarkets became cut flower marketers, suppliers other than the local grower have indeed taken on greater importance. (For potted plants, local growers and out-of-state growers accounted for 62.4 percent and 25.7 percent of the sources, respectively, while wholesale florists were only cited as the potted plant source 7.3 percent of the time in 1978. Local growers, out-of-state growers and wholesale florists were listed as 1978 sources for bedding plants 84.0 percent, 8.6 percent and 4.9 percent of the time, respectively [Kress, 1979]. In 1982, local growers, out-of-state growers, brokers, wholesalers or local florists, foreign suppliers and others were cited as sources for potted plant supply by 56.8 percent, 22.9 percent, 5.1 percent, 9.3 percent, 0.8 percent and 5.1 percent of mass marketers surveyed, respectively. Bedding plant sources were local growers (63.8 percent), out-of-state growers (18.3 percent), brokers (3.8 percent), wholesalers or local florists (3.8 percent) and others (1.9 percent) in 1982 [Kress et al., 1983]). While the bulkiness and weight of potted plants and bedding

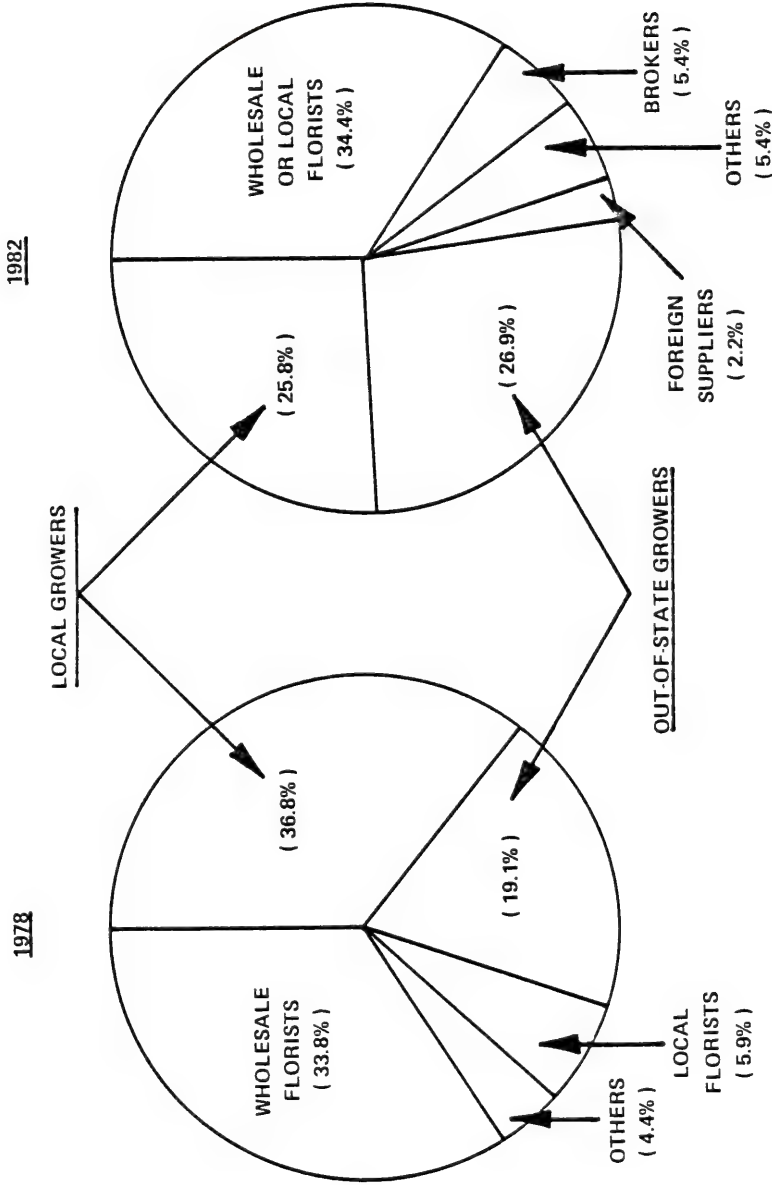


Figure 6-5. Breakdown of Cut Flower Product Sources for Mass Marketers, 1978 and 1982

SOURCE: Kress [1979] for 1978 diagram and Kress et al. [1983] for 1982 diagram.

plants may account for the dominance of local sources of supply for these products, this author anticipates that mass marketers will continue to switch their allegiance to large out-of-state growers and wholesale shippers for their cut flower sources in the future.

Whether they be mass marketers or traditional retail florists, these retailers retail, and consumers buy or receive their flowers. The 1977 Census of Retail Trade [U.S. Bureau of the Census, 1978] reports that, in 1977, there were 29,375 retail florist shops in the U.S. Table 5-2 listed the shops by state (numbers and sales) and Table 6-4 lists shops by sales size. Only 4 percent of all shops had sales of \$300,000 or more, while 21 percent had sales between \$100,000 and \$299,000.

In 1979, there were 168,900 grocery stores in the U.S. (Table 6-5). Of these, only the largest 23,600 supermarkets might be considered potential mass marketers of cut flowers (sales greater than \$1 million per year). Kress [1979], in 1978, found that 16.2 percent of the 17,125 stores he surveyed (sales levels unknown) carried cut flowers on a regular basis, and another 6.2 percent carried cut flowers on a seasonal basis; 64.2 percent of the stores surveyed did deal with some floricultural products (but not necessarily cut flowers). By 1982, 86 percent of the stores surveyed were involved with some floricultural products, but only 23 percent and 15 percent of the stores were involved with cut flowers on a regular or seasonal basis, respectively [Kress et al., 1983].

The jobs of retailers vary. Retailers, of course, arrange and sell flowers. However, not all flowers are arranged and not all retailers arrange flowers. Many mass marketers and some traditional retail florists sell bouquets of either one or mixed species. Sometimes these



Table 6-4. Sales Size of Retail Florist Establishments, 1977

Sales Level	Establishments		Total Sales	
	(Number)	(%) <sup>a</sup>	(\$1,000)	(%) <sup>a</sup>
Establishments Operated Entire Year with Annual Sales of:	24,746	84.2	2,199,802	91.7
\$5,000,000 or more	--	--	--	--
2,000,000 to 4,999,000	5	--b	13,244	0.6
1,000,000 to 1,999,000	49	0.2	65,265	2.7
500,000 to 999,000	234	1.0	151,820	6.3
300,000 to 499,000	724	2.5	266,549	11.1
100,000 to 299,000	6,209	21.1	999,862	41.7
50,000 to 99,000	6,253	21.3	448,961	18.7
30,000 to 49,000	3,814	13.0	149,768	6.2
20,000 to 29,000	2,220	7.6	53,954	2.3
10,000 to 19,000	2,421	8.2	34,778	1.5
Less than 10,000	2,817	9.6	15,601	0.7
Establishments Not Operated Entire Year	4,629	15.8	200,226	8.3
In business at end of year	4,629	15.8	110,289	4.6
Not in business at end of year	(3,341)	--	89,937	3.8
Total All Establishments	29,375	100.0	2,400,028	100.0

<sup>a</sup>May not add to 100.0 percent due to rounding.<sup>b</sup>Less than 0.05 percent.

SOURCE: Adapted from U.S. Bureau of the Census, 1977 Census of Retail Trade [1978].

Table 6-5. Number of Retail Grocery Stores in the U.S. by Sales Level, 1979

Store Type	Sales Level (Million \$)	Number of Stores
<u>Chains:</u>		
Supermarkets	1-2	1,575
	2-4	5,500
	4-8	8,150
	> 8	<u>3,000</u>
Subtotal		18,225
Small stores	< 1	<u>500</u>
Total Chain Stores		<u>18,725</u>
<u>Independents:</u>		
Supermarkets	1-2	6,230
	2-4	5,750
	4-8	2,575
	> 8	<u>820</u>
Subtotal		15,375
Small stores	< 1	<u>100,675</u>
Total Independent Stores		<u>116,050</u>
<u>Convenience Stores:</u>		<u>34,125</u>
TOTAL GROCERY STORES		<u>168,900</u>

SOURCE: Anonymous [1980].

bouquets have been assembled by wholesalers, import brokers, shippers or even growers. Some retailers specialize in selling flowers one at a time. Some mass marketers buy (sometimes on a consignment basis) pre-made cut flower arrangements that have been prepared by other retailers or wholesalers; although the designs may be somewhat standardized, they are often quite suitable for many occasions, perhaps with only the changing of an attached greeting card. Yet, traditional retail florists are still responsible for the overwhelming majority of cut flower sales, and these still occur in the form of cut flower arrangements [FTD, 1977; The Floral Index, Inc., 1979, 1980, 1981]. (In addition, most retailers are involved with sales of an assortment of other products, not necessarily all horticultural in nature.)

For the most part, mass marketers seem to be focusing most of their cut flower energies on selling bunches of flowers. In many locales, mass market floral displays are not even staffed, except for an occasional checking by produce department or front-end personnel. Kress [1979] found only 2.6 percent of the surveyed supermarkets which carried floral products in 1978 had a full-time florist; Kress, however, noted that this was sharply up from 0.3 percent of stores he surveyed in an earlier 1975 study. By 1982, 19 percent of stores with formal floral departments had full-time floral personnel [Kress et al., 1983]. In some areas, store managers contract with jobbers or other routemen for the maintenance of flower department displays.

When staffing displays, mass market department personnel often are chiefly responsible for assisting customers in flower or plant selection and for departmental maintenance, rather than for the assumption of designing duties. More and more large stores and especially chain

stores are requiring full- and part-time flower department personnel to take chain-sponsored designing and department management classes. Kress [1979] found that over 55 percent of supermarket firms provided some training of floral department personnel (including those responsible for only checking displays) in 1978. However, 40 percent of those offering training gave less than eight hours. A total of 80 percent of those training personnel had 30 hours or less of instruction.

Some chain store flower departments have been involved with cash-and-carry wedding work and other more elaborate and more traditional florist-oriented work, however. While not widespread, a few supermarkets have gone to the great lengths required to become affiliated with one of the major wire services. Such affiliation requires full service features, including delivery. There is also a new wire service catering specifically to mass merchandisers. In 1982, Kress found 7 percent of stores with formal floral departments had become affiliated with some wire service [Kress et al., 1983].

The role of the traditional retailer (and, perhaps, eventually the typical mass market retailer) almost always goes beyond that of just arranging, wrapping or boxing flowers. Retailers are often asked to provide complete service for weddings. This often involves everything from the renting of candelabra and the placing of the runner down the aisle to handing the bride her bouquet just before she leaves for the altar. Retailers are often called upon to wire flower orders around the world and to order flowers from around the world in order to maintain a varied inventory for local customers. Retailers are also relied on to provide delivery service and to offer some kind of credit arrangement to customers; the latter is often necessitated by the fact that many orders

arrive via telephone, if for no other reason. (Havis [1965] found that about three-fourths of the typical florist's orders were made via telephone.) And probably the most important and most difficult of all retailer jobs is the role of playing goodwill ambassador to the public for the floral industry.

Vertically integrated firms. The industry includes many vertically integrated firms which have chosen to overlap, or in some cases to absorb, the responsibilities of some of the other market channel participants. Many retailers have their own growing facilities. Although supplements are usually needed to supply adequate inventory, these retailers have chosen to provide at least part of their requirements themselves. While this is almost exclusively confined to traditional retailers, there is at least one Midwestern mass market which operates its own greenhouse facility for partial self-supply.

FTD [1982c] reported that only 31 percent of the florist members it surveyed in 1980 owned a greenhouse; this figure is down from 40 percent in 1970 and 38 percent in 1975. Fuel costs have probably played a role in the divestiture of greenhouses. In 1980, the majority of the firms with greenhouses used them primarily for sales and display (58 percent); 47 percent of shops surveyed reported using their greenhouses for holding. Only 44 percent of these florists reported any greenhouse crop production in 1980. In 1975, greenhouses were used for growing, holding and sales/display by 56 percent, 56 percent and 69 percent of those surveyed, respectively.

It is also probable that the majority of those with greenhouses today likely concentrate any growing efforts on raising potted blooming

and foliage plants rather than cut flower production, perhaps due to the relative costs of shipping in flowers to that of shipping these bulkier items. Havis [1967] confirmed this to be the case in 1964-1965. He stated that florists purchased 88 percent of their cut flowers but only 78 percent of their flowering and foliage plants. (Florists also bought 99 percent of their greenery.) Florists grew the remainder (about 14 percent) of their merchandise.

Other cases of vertical integration abound. One trucking firm in Florida has moved vertically into the customshouse brokerage business, while a California trucker has expanded into a precooling and perishables storage facility. Many growers have integrated into the wholesaling and/or shipping arenas; some operate their own truck fleets for at least part of their sales routes.

Hypothesis H23 (Chapter II) suggests that vertical integration or disintegration activity is positively related to the rate of growth or decline of commodities and the rate of technical change. A subsector is then expected to be organizationally stable if it is experiencing little growth or decline and few technical changes. The facts that the domestic cut flower industry at the growers' level is declining in numbers, that the retail level is experiencing a great change with the surge in mass marketing of cut flowers and that many technological changes involving handling procedures are taking place provide partial evidence that would suggest a certain amount of instability currently exists in the industry at present. Hence, the hypothesis would be supported by current conditions in the U.S. cut flower industry.

The market channel picture completed. Other firms, although not specifically integrating organizationally, attempt to bypass the "normal" market channels. Many retailers arrange with growers for direct purchases. Although this most widely occurs for cut flowers in large growing areas such as California [Sullivan *et al.*, 1980], there are cases to be found wherever growers and retailers meet. Mass marketers have been very aggressive in these direct grower contacts, especially for potted blooming plants and holiday specials.

As an example, Prince and Robertson [1982] found that, although the primary avenue of rose distribution was still from grower to wholesaler, 20 percent of the rose growers surveyed sold primarily to retailers. Another 32 percent used a combination of wholesale and retail outlets. Due to the reputation of roses for high perishability, rose growers probably encountered more instances of direct contacts with retailers than do cut flower growers in general. Furthermore, as the U.S. rose production is concentrated in California (Table 4-18) which is also the state of highest florist shop sales and numbers (Table 5-2), greater opportunity for direct grower-to-retailer contact probably exists.

Some retail firms try to bypass local wholesalers for some or all of their merchandise by arranging for direct shipments from growers or large wholesalers located in growing areas or the terminal market cities. There are even examples of growing area shippers who specialize in working with retailers. These operators sometimes provide the mixed lots usually desired by retailers, instead of the box lots of one species or variety often typical of produce sent to wholesalers.

Almost any combination of grower, shipper, wholesaler or retailer can be found somewhere in the industry, and flowers travel by almost any

route imagined. However, Figure 6-6 now attempts to depict the main flows of product from seed/cutting/plant suppliers to the end consumer. It should be restated here, however, that the diagram and this discussion have only dealt with cut flower supplies. Other product, as previously discussed in Chapter III, goes into the end flower arrangement. The hard goods supplies are typically provided to retailers from either wholesalers who inventory these products with their perishable merchandise or through travelling salesmen (representing large companies), jobbers and/or routemen who (arrange to) deliver to store door.

The consumer. At the end of the marketing channel is the consumer. Hence, the next question logically asked might relate to the type of retailer from which consumers are more likely to purchase. Of first concern, however, is the question of "are consumers likely to purchase flowers?" The FTD Flower Business Fact Book reported that, in 1972, 60 percent of adult populations from urban areas made some kind of flower purchase [FTD, 1977]. More recently, The Wall Street Journal in 1980 cited a Foote, Cone and Belding (an ad agency) study that suggested that 63 percent of the public had brought fresh flowers in the previous year [Abrams, 1980]. Hence, one may first conclude that perhaps 37 percent (or more) of the public does not even buy fresh cut flowers.

Recent data on location of purchase are somewhat limited. FTD, in 1977, suggested that three out of four consumers made their last floral purchase at a retail florist. The most recent study by the Society of American Florists suggests that 60 percent of the public never visits retail flower shops [Gillette, 1981b]. A previous survey by this author



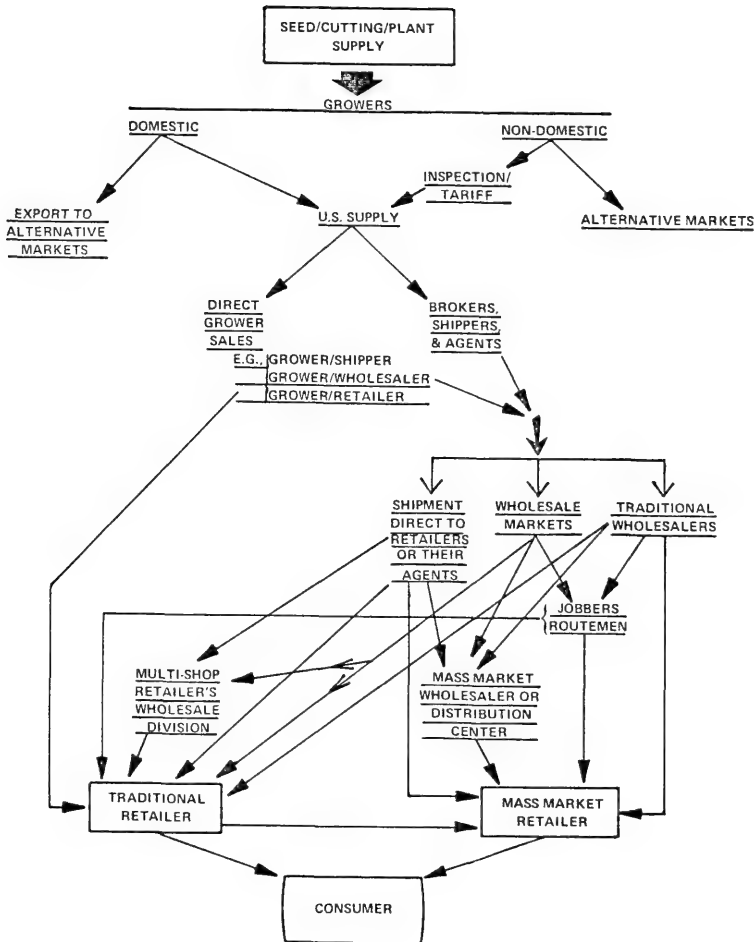


Figure 6-6. Main Flows of Cut Flower Product from Inception to Consumer

conducted in spring 1977 in the Lafayette-West Lafayette Indiana Standard Metropolitan Statistical Area asked those that purchased flowers about their purchase location. Of 1,420 persons responding, 42.2 percent claimed to purchase only at florist shops, 4.9 percent claimed to purchase only at supermarkets, 52.5 percent claimed to purchase at both flower shops and supermarkets and 0.4 percent claimed to purchase at other mass market locations only [Miller, 1977].

Hence, if one were to combine these last data with the previous suggestion that only 63 percent of consumers even buy flowers, one can conclude that about 26.6 percent of the public purchases flowers only at flower shops, 3.4 percent buys only at mass market locations and 33.1 percent procurs flowers at both types of locations. Figure 6-7 summarizes these conclusions.

The Floral Report [The Floral Index, Inc., 1981] suggests that florists sell about 90 percent of the cut flowers marketed at retail in terms of dollars. This share does fluctuate for any month, sometimes as much as 5 percentage points. Supermarkets, over four of the five years 1976-1980, served an average of about 25 percent of the floral item buyers (included other than just cut flowers) buying in the marketplace during the average month. Hence, it might be concluded that the figures summarized in Figure 6-7 are within a conceivable range.

The role of the wire services. Another factor which should be considered is the role of the wire services. Historically, wire service organizations such as Florists' Transworld Delivery Association (FTD) have acted as clearinghouses for wire service orders. Such roles continue. (To the public, wire services are mostly known in that they

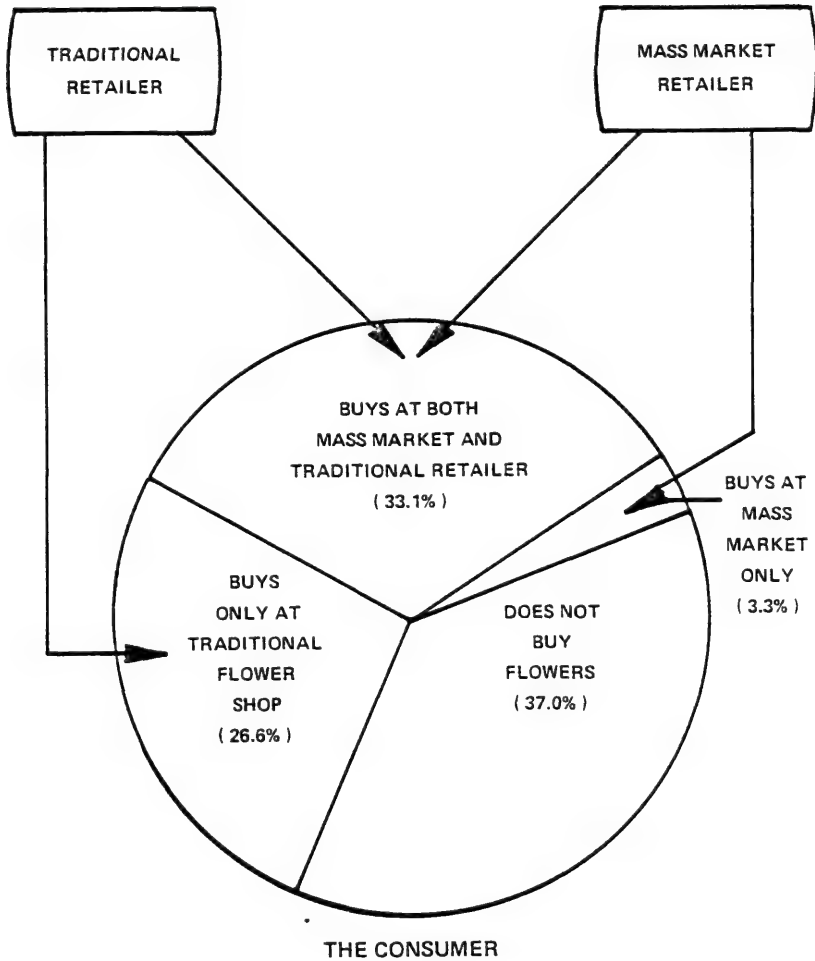


Figure 6-7. Depiction of Possible Breakdown of Outlets Where Consumers Shop for Flowers

allow consumers to send flower orders to almost any corner of the free world.) Yet, today the roles of the wire services go much beyond that of intra-industry bankers and ordering arms.

Today, wire services, along with trade organizations, are the leading advertisers and, perhaps the leading influencers of consumer tastes and preferences. These groups may theoretically belong below the "consumer" in Figure 6-6, as their advertising may act to pull product through the market channel. Wire service selection guides and posters of seasonal bouquets also help with this, as they act as point-of-purchase advertisements.

Recently wire services have begun to supply hard goods to retailers as well. Initially these have involved containers and other accoutrements for seasonal arrangements. Yet, the linking of the industry via computer terminals, as several of the wire services have already made some progress in doing, may eventually allow for many other supplies to be purchased through the wire service organizations.

#### Timing of Product Flow

Now that flowers have been traced through the market channel, it is only appropriate for their time in travel to be analyzed. Naturally, different crops require different lengths of time for production. Some indication of the variable time length was offered in the discussion of Chapter III of the major cut flower species. Yet, let it suffice to say that some crops can be cut within weeks of planting, while others may take years from planting to initial flower harvest (e.g., orchids).

Once harvested, however, product movement through the market channel is relatively expedient. Nevertheless, considerable

variance occurs. If one is a grower-retailer, product can be theoretically harvested and sold to the retail consumer within a matter of minutes. Other product can experience a delay of weeks if it is not too perishable, not facing a strong market and if use of preservatives and other life-prolonging techniques is maintained throughout the market channel. Indeed, with hypobaric storage it is conceivable that product, properly stored, can be months old before it ever reaches market. (Hypobaric storage is not currently economically feasible.)

The range does not adequately describe the typical reality. Roses and snapdragons are still raised in a relatively decentralized pattern throughout the United States [USDA, Floriculture Crops, various issues]; this fact combined with their relatively high perishability forces operators to speed them to market in a matter of a few days. Other crops are often imported, e.g., pompon chrysanthemums and carnations; they may be in transit for a week or more from being cut to arriving at the local wholesaler. Such wholesalers may or may not have a ready client for the sale. Hence, an added delay may result before flowers arrive at a retailer's shop. Retailers often have a two- or three-day turnover period (frequently longer in slow periods or in rural settings), so flowers may potentially be two or more weeks from cut before consumers purchase them (Appendix A). Naturally, air shipment will speed the distribution relative to truck shipments and being near major markets, growing areas or import centers will decrease the distribution time. Essentially though, as nothing typically happens to flowers to change their form until they are in the hands of the retailer (unless a wholesaler is making standard arrangements or premade

bouquets), cut flowers move through the distribution system fairly smoothly and with systematic speed.

### Contractual Arrangements

One area which has tremendous potential for reducing distribution time is if the product is presold. In such a case, end marketing time (and sometimes costs) can be eliminated or reduced. Contractual arrangements provide some potential in this area.

This industry has historically been void of contractual arrangements of most kinds, however. Havis [1967] found that florists purchased only 8 percent of the cut flowers they bought through standing orders in 1964-1965. Only 6 percent of flowering and foliage plants were purchased via standing orders. With the advent of mass marketing of floricultural products though, many growers suddenly found themselves begged for contracts by mass merchandisers having difficulty obtaining potted holiday crops, especially poinsettias at Christmas and lilies at Easter, and other product. Growers found themselves faced with something never before experienced, and they responded hesitantly at first. Yet, for those that experimented with contractual agreements, the promise of a market and of relatively prompt payment created an appeal. While frequency of contracting has not drastically changed in grower-supermarket transactions, some growers have begun to ask their traditional clients for similar commitments, especially for holiday supplies. Sullivan et al. [1980, p. 16] report that some contracts have been arranged between large retailers and wholesalers and Latin American producers.

Yet, such arrangements are still rare for cut flower supplies. Many mass marketers have arranged with retailers, jobbers or brokers for the servicing of floral displays. Yet, agreements for continual supplies are infrequent. During this author's survey of the industry, few growers or wholesalers talked of contract arrangements; many had experimented with same, but few were sold on their reliability. On the other hand, some wholesalers and shippers did mention that they had standard quantities which they supplied to some clients on a steady weekly or twice-weekly basis. While written contractual arrangements were usually not in effect, these shipping arrangements might, nevertheless, be construed as contracts in their operational methodology.

Some of the data from the Kress [1979] studies of supermarket firms offer additional information. Kress found that 61 percent of supermarket firms had contracts, written or oral, with their suppliers of potted plants in 1979. Supplies of bedding plants were also arranged by contract in 42 percent of the cases. However, of the firms surveyed which handled cut flowers, only 13.7 percent had oral or written contracts with suppliers. Kress found that the use of contractual arrangements by supermarket firms had not noticeably changed from 1975. By 1982, some changes were evident. Of firms with floral departments, only 47.8 percent had formal contracts with suppliers for potted plants. For bedding plants, only 31.8 percent of the firms had formal commitments with suppliers. In view of the noticeable drops in contract involvement for potted plants and bedding plants, it is perhaps ironic that the percentage of firms operating with formal cut flower supply contracts in 1982 was virtually unchanged from the previous study; this figure was 13.3 percent [Kress et al., 1983].

Hypotheses H24, H25 and H26 (Chapter II) offer the suggestion that firms contracting for sale of outputs or input supply have as incentives the reduction of market and price uncertainties. Hypothesis H25 testifies to the motives of mass marketers who first approached growers for input supply to gain sufficient control over quantity, quality and delivery schedule of inputs. The fact that supermarkets initially had trouble breaking into established supply channels supports the hypothesis. Hypothesis H24 follows with the reason many growers pursued contractual arrangements from all of their clients, i.e., for the reduction of market and price uncertainties. The level of contracting of suppliers, according to H24, is positively related to the level of specialization and past variability of product prices. Potted plant growers who devote large portions of their operations to holiday plant crops can be considered very specialized indeed. Hypothesis H26 suggests why there are only minimal cut flower contracts in the industry; it suggests that incentives to contract are greatest for buyers when inadequate supply is available (holiday periods for cut flowers) and greatest for sellers when there is excess supply and markets are glutted. Hence, the breaking of contracts is encouraged. Again, business practices in the cut flower industry tend to support these hypotheses.

#### Communication and Change in the Market Channel

In examining the completed picture of the marketing channel, one is almost forced to inquire as to whether communication among channel participants adequately conveys the desires of consumers all the way back to the grower. Raymond Joseph, in an August 1981 article in The



Wall Street Journal, suggested that florists were enjoying new growth in sales of exotic varieties. Rarer blooms were said to be attracting consumers, on a regular basis, who wanted to enrich their life styles. Yet, Joseph [1981] pointed out that many of the exotics are imported. The domestic grower, then, may not be benefiting from market channel communication.

Retailers do, in the form of wire service memoranda to wholesalers and growers, affect the product in the system. Wire services often promulgate lists of future needs for their seasonal specials long before such needs arise. This enables producers to alter their future plans and, hopefully, grow a more readily marketable product.

University, industry and trade research and publications have provided stimuli for change as well. Consumer surveys, for instance, have in some cases convinced mass merchandisers that their establishments were being considered dumping grounds for poor products. As a result, many supermarket executives interviewed by this writer report that product quality, rather than price, was now their chief concern when buying merchandise for sale. New species and varieties are readily disseminated when they become available, and new techniques are used almost as soon as innovators prove their worthiness to fellow growers.

Channel participants also convey likes and dislikes through the system and often effect changes. Mass merchandisers have insisted on being able to purchase first quality merchandise without necessarily paying for the longer stems associated with the top grades of many species in the traditional markets. As a result, some growers, grower-shippers and wholesalers have altered their growing and

merchandising activities to meet these needs. Some growers have different production schemes for traditional product versus produce for mass merchandisers. A number of wholesalers have created separate divisions for traditional retail and mass market clients. Still others have established themselves as suppliers of merchandise primarily intended for mass market use.

While such changes are often slow to occur, they do occur. Initial moves toward change in the cut flower industry have often occurred in vertically integrated firms, where one division alters its procedures in response to requests of other company divisions. The bypassing of traditional marketing channels also effects some changes for similar reasons. Brokerage operations also allow for such changes, as market participants can direct firms to carry out specific objectives for them.

A further look to the extent to which supply offerings of sellers match demand preferences of buyers will be taken in Chapter VII.

#### Structure and Characteristics of Buying and Selling Industries at Each Level in the Subsector

##### Identification of Relevant Markets and Business Concentrations

The local florist industry in any area generally originated on the edge of a town. There was often a greenhouse at the corporate limits, the owner of which would both grow and sell the flowers. As time passed, specialization frequently overtook this local entrepreneur and, indeed, much of the industry. Today, the grower is seldom the retailer. Furthermore, whether due to zoning laws, land availability, tax rates or for other reasons, the majority of producers try to avoid urban areas, at least for the majority of their operations. Growers today have moved

to distant locations, in exurbia or often to other countries; most rely on transportation and other persons in the marketing channel to distribute their product to end consumers.

Yet, the question of relevancy of certain locations and specific markets still persists. Each market channel participant must rely on a clientele to survive. For the grower, a buyer, whether he be an end consumer (as for a grower-retailer), a retailer (as for a grower-wholesaler), a wholesaler (as for a grower-shipper) or a shipper (as for the operator who strictly grows), must exist to move the merchandise through the system. In the case of the retailer, a buying public must endure to supply the adequate patronage needed for survival. And for each market participant who falls between the grower and the retailer, the process of identifying both a relevant market and an adequate supply source is one that must be undertaken.

For a traditional retailer, this issue is often referred to as one of site selection. In his book, The Retail Florist Business, Peter Pfahl [1968, pp. 27-30] suggested that, in choosing a city, florists should consider the people of a city as potential customers. The stability of the businesses and industries in the community, the income of the population, the status of the current florist shops, the per capita sales of the area, the transportation facilities and the potential for profitability should also be researched. Pfahl continued to suggest that site location within the city should be in the progressive part of town. He maintained that a shop should be in or near a business district, where there is convenient parking, affordable rent or mortgaging possibilities, adequate room for delivery vehicles and where nearby buildings will add to, rather than detract from, a

floral business. Pfahl also suggests that it takes about 10,000 persons to support a retail flower shop satisfactorily.

Such factors are seen implemented in different ways by different entrepreneurs. Conroy, Inc., a southern California flower-shop chain, chooses choice corner lots at major intersections [Joseph, 1981]. The Southflower Market on 68th Street in New York City located on a parcel that had 20,000 people passing by it each day [Mitchell, 1981]. Numerous shops have located in large regional shopping malls, and some have even opened inside supermarkets, either by renting space or by sharing the profits with the store.

Today's advent of many non-traditional sellers in the marketplace makes the job of site selection even more important. Depending on the particular situation, non-traditional outlets may (or may not) pose additional competitive restraints. The presence of supermarkets, department, drug and discount stores, as well as other traditional shops in the same trading area should be recognized for their potential for altering the competitive picture. If the presence of other cash-and-carry outlets may affect a particular market niche under consideration, zoning and business regulations should also be checked to see whether they allow for street-corner vendors.

FTD [1982c] reported that, in 1980, 33 percent of single ownership shops were located in neighborhood shopping districts with other stores, while 27 percent of the shops were located in downtown shopping districts. Residential areas, away from other stores, played host to 20 percent of the single ownership shops in 1980. Only 9 percent of such shops were located in shopping malls, centers or strip centers; 7 percent of single ownership shops could be found surrounded by non-retail

businesses such as offices or medical buildings. Finally, 5 percent of these shops claimed rural areas as their homes.

It should also be noted that florists, too, have opened some outlets that must be considered less than traditional. In 1980, FTD members reported 1,418 such outlets. Supermarkets, department stores, hotels, discount stores, military bases and airport terminals each played host to shops, some of which offered full services. Some FTD members also offered less than full service outlets in locations such as hospitals, plant stores, street or sidewalk displays away from their shops, shopping mall kiosks, drug stores, office buildings, variety stores and other branch outlets. Of all such auxiliary outlets, only 12.8 percent were full service shops [FTD, 1982c].

Some available data may provide clues for identifying relevant markets. Dividing the 1977 U.S. population [U.S. Bureau of the Census, Statistical Abstract, 1979] by the number of retail florists [U.S. Bureau of the Census, 1977 Census of Retail Trade, 1978] indicates that there were 7,383.8 persons per retail shop in 1977. Although the possibilities do exist for statistical error, comparing this with similar data for five years earlier indicates that there were 8,539.1 persons per retail flower shop in the U.S. in 1972. Not only had the estimated number of shops increased by about 5,000 over that period, but the concentration of retail shops had increased as well. These figures do not account for increases in non-traditional outlets of flowers. (In 1978, Kress found that 22.4 percent of supermarkets surveyed carried cut flowers on a regular or seasonal basis [Kress, 1979]. In 1979, there were 33,600 supermarkets with sales over \$1,000 annually or one for every 6,565 persons [Anonymous, 1980].) The business climates of the

two periods may have affected the results, as the economies of the time may have been significantly different. Furthermore, the 1970s saw a foliage plant boom which may have added many to the number of shops by the late 1970s. This plant boom has since peaked [Smith et al., 1981]. With its subsequent decline, many plant boutiques may have also succumbed to economic pressures.

Table 5-4 gave a further breakdown of flower shop data, comparing population and number of and sales of florist shops for the 50 states and the District of Columbia. Table 5-5 made similar comparisons for different regions of the country.

There is some disparity between shops operating in metropolitan and non-metropolitan areas. The top 50 metropolitan areas accounted for 47 percent of the population and about 50 percent of total retail sales of all goods and services in the U.S. in 1975. Accounting for 28 percent of the population and 29 percent of total retail sales were 250 other metropolitan areas. Non-metropolitan areas, with 25 percent of the U.S. population, accounted for only 21 percent of the total retail sales in 1975. The top 50 metropolitan areas, furthermore, had 42 percent of FTD members (U.S.) in 1975 serving that 47 percent of the population, while 27 percent of FTD members were serving the 28 percent of the population living in the 250 other metropolitan areas. Non-metropolitan areas, with 25 percent of the U.S. population, had 31 percent of FTD's U.S. members [FTD, 1977]. In other words, rural areas had more affiliated shops serving the smaller clientele. If flower sales correspond to most retail sales, these rural shops also had fewer sales than did urban areas with their larger populations and fewer shops.

Overall, the cut flower industry must be considered competitive at the retail level. The 1977 Census of Retail Trade [U.S. Bureau of the Census, 1978], in considering only the traditional industry, reported that the top four florists' firms had 39 shops and accounted for only 1.0 percent of sales. The eight largest firms, with 104 establishments, only accounted for 1.5 percent of industry sales. Even the 50 largest firms, with 229 of the industry's 29,375 outlets (0.8 percent of outlets), still accounted for only 4.4 percent of industry sales. (Table 6-4 reported sales levels of all retail florist shops.)

At other levels in the floral marketing chain, locational considerations are also pertinent. Wholesalers, which in 1977 existed at the rate of one for each 9.35 retail florists [U.S. Bureau of the Census, 1977 Census of Retail Trade, 1978; U.S. Bureau of the Census, 1977 Census of Wholesale Trade, 1979], must be in areas with relatively convenient access to suppliers and customers. In major cities, such a location description might be in a downtown business district; in other locales, such a location might be purposely avoided for the same reasons of convenience. Whether wholesalers pick up product from growers or growers deliver it, and whether wholesalers deliver product to retailers or retail customers pick up the merchandise sold, may affect such location decisions. In the cities of New York, Los Angeles, San Francisco, Portland and Boston, most wholesalers have consolidated their efforts by organizing into markets or market neighborhoods (as in New York City). Such consolidation, as elsewhere described in this chapter and Appendix A, obviously affects wholesale location as well; wholesalers may want to be part of the conglomeration or specifically to avoid it (to provide an alternative), depending on

the competitive advantages sought by the firms and those perceived by potential clients.

The existence of wholesalers does not always directly coincide with availability of product. Wholesalers have probably been the most restrictive in their sales policies, perhaps, because of their middlemen status. Wholesalers, in some areas, have refused to sell anything to unlicensed retailers, for fear of retaliation by their traditional retail clients. Some wholesalers have refused to sell to non-traditional retailers for similar reasons [Sullivan et al., 1980, p. 58]. In other areas, wholesalers have been known to restrict their customers by size-of-lot restrictions, regularity-of-purchase restrictions or the like. Often wholesalers will limit their sales to those retailers who have consistently patronized them year-round.

The wholesale trade is not quite as structurally competitive as the retail level of the industry. This sometimes allows wholesalers to exercise options as to whom they will sell. The 1977 Census of Wholesale Trade [U.S. Bureau of the Census, 1979] reports that, for merchant wholesalers, the top 27 firms (1.3 percent of the total) handled 18.8 percent of all sales. The top 153 firms (7.3 percent) handled over 42 percent of total sales, and the top 40.8 percent of firms handled 84.4 percent of the sales of all merchant wholesalers. One can see the potential for market power since merchant wholesalers represent nearly 95 percent of all wholesale firms (agents, brokers and commission merchants being the rest) and over 85 percent of wholesale sales. (Table 6-2 gave a breakdown by sales level of all merchant wholesalers operating in 1977.)



By and large, retailers can find wholesalers who will supply them, and wholesalers can find growers, shippers or importers who will, in turn, provide them with merchandise. Source and quality of supply, prices paid and/or services rendered may be considered less than ideal by some, but product is generally available to all who seek it, depending on credit worthiness. The generally competitive nature of the wholesale level of the marketing chain (considering all of the alternative product sources) assures this.

At the grower level, locating where there is convenient transportation may be of some importance, but the availability of affordable land usually takes the top priority. If growers run extensive shipping operations, access to transportation obviously becomes more important; however, transportation firms have in the past provided services to areas with large concentrations of shippers [Fontana, 1982]. Grower-retailers and grower-wholesalers obviously must consider clientele when locating as well.

Climate often plays a chief role in a grower's determination of general location. Some locales lend themselves to unprotected production for some crops but not for others; some areas may allow for such production for only part of the year. In the most northern part of the U.S., growers face some inherent restrictions as to the crops they may raise based on the light transmitting nature of their particular greenhouse glazing. Heating costs are obviously affected by location. The benefits of micro-climates in certain locales also can influence decisions of locating or production after locating. Such locational considerations do not guarantee that the competitive aspects of a particular market will coincide with the discovery of the ideal

growing site. Most of the truly ideal sites where cultural and competitive considerations both excel have probably been discovered, if not already saturated.

Growers might be considered fairly concentrated. The 1979 Census of Horticultural Specialties [U.S. Bureau of the Census, 1982] provides the following data: the top 5.7 percent of domestic growing establishments (222 firms each with sales of at least \$500,000) conducted over half (50.2 percent) of the domestically produced cut flower sales. Another 6.7 percent (259 firms each with sales between \$250,000 and \$499,000) were responsible for almost 18 percent of the domestic industry's sales, and an additional 16.8 percent of the domestic growing firms (655 operations) accounted for 18.6 percent of sales. All told, firms with sales of at least \$100,000 (28.2 percent of the domestic firms) handled 86.7 percent of industry sales. (Table 6-1 gave a breakdown of sales levels of the U.S. cut flower growing establishments in 1979.)

The existence of some competitive edge in merchandising, in service or in the product itself may be the most important key in the discovery of relevant markets. Examination of the producing, wholesaling and retailing climates in an area may be pertinent to establishing a successful niche no matter the level of the marketing chain one has under consideration. It may be easier to establish a business in an area with many small competitors than to found an operation in a community dominated by one or two giants. Expenditures for advertising, locations of the various firms (at all levels of the marketing chain) in relation to each other and comparisons of services offered are just some of the items which may be able to reflect the competitive business

environment. Competition, support services and general business climate will all affect the abilities to succeed.

### Entry and Exit Conditions

The cut flower industry can be characterized as being competitive at all levels, although this is most noticeable at the retail level. In large cities, the wholesale market level can also be characterized as being competitive. In smaller cities and towns, the wholesale market level may have at least the appearance of trending towards oligopoly. The wholesale segment of the industry may be monopolistic or even be non-existent in the smallest of towns. The grower level may be the most concentrated as large firms dominate the domestic production; however, entry and exit conditions are relatively free.

Retail level. The retail market level can be characterized as being close to perfect competition; as such, each individual business is an insignificant part of the total. Entry and exit are both relatively easy and, given the demand (e.g., one shop per 10,000 persons as Pfahl [1968] has suggested), a retail shop may be established with relative ease. In a traditional retail setting, once an outlet is rented (or bought) and credit is established with a wholesaler for a source of perishables, the only capital requirements might be for one or two refrigerated units, a cash register, some kind of delivery vehicle and some limited inventory of "hard goods" products for designing. Depending on size, age (whether new or used) and condition, etc., these might be had for anywhere from under \$10,000 to \$20,000. Other sums might be considered necessary, such as amounts to cover accounts receivable, beginning payroll and occupancy expenses, overhead costs and

other contingencies. Sullivan et al. suggest that a shop expecting \$100,000 in annual sales be capitalized at about \$37,500 (1980) [Sullivan et al., 1980, p. 150]. (In a mass market setting, even the delivery vehicle and, perhaps, the refrigerated unit, can be dispensed with.) In time, further inventory needs, especially for non-perishables and supplies, can be satisfied.

Pfahl [1968, p. 34] states that most retail florists were self-trained by working in a flower shop for years. He suggests that a retail florist must be an artist, a designer, a businessman, a buyer, a salesman, a provider of services and an advisor. Pfahl also characterizes the retail florist business as "an easy-entry business."

To establish the typical mass merchandising outlet in the industry (as it appears today) requires less money (although this amount might be considered less than what the ideal outlet might cost). Indeed, 75 percent of the 3,861 stores surveyed by George Kress in 1978 used only buckets for fresh flower display [Kress, 1979]. By 1982, 66 percent of those handling cut flowers regularly still relied on buckets for display [Kress et al., 1983]. Depending on the extent of the display, one could theoretically open a mass market floral display by "borrowing" some buckets from the inventory of the housewares/general merchandise department of the store. A more elaborate set up would naturally require a greater investment. Again, contacting a wholesaler, grower or retailer directly, unless affiliated with a chain which itself warehouses the flowers, will be essential to establish a source of supply.

The average traditional firm typically will incur accounts payable and receivable in the course of doing business. As most wholesalers sell on a credit basis, at least to their regular customers, retail florists readily accumulate some debts (bills are often sent cyclically in biweekly or monthly patterns). Similarly, in as much as 90 percent of some retail shops' business is initiated via the telephone [FTD, 1982c], there exists much opportunity for the retailer's customers to charge their purchases. (Indeed, FTD reported that 27 percent of the ownerships surveyed reported 70 to 79 percent of their total business generated by telephone; 19 percent of the owners and 11 percent of the owners reported that 80 to 89 percent of their business and 90 to 100 percent of their business, respectively, was the result of telephone sales. Only 12 percent of FTD ownerships in 1980 reported less than 50 percent of their sales originating in this manner [FTD, 1982c].) Havis [1967] found that telephone sales often translated into credit sales; 73 percent of the sales of the florists who offered some credit arrangements (about 95 percent of all florists) were made on credit. As retail billing also occurs cyclically in most shops, retailers amass receivables, which they hopefully collect. The trick, of course, is to keep receipts ahead of debts.

If such is not possible and the business fails, market exit takes place. While bankruptcy brings with it visits by creditors, the market exit conditions for retail florists are also relatively free. Non-perishable inventory can be readily sold to other shops. There are usually markets for used cash registers and delivery vans. A buyer can often be found for a used floral cooler, although some firms may have difficulty selling those of certain sizes, makes or ages, etc.

Market exit in a perfectly competitive environment such as this occurs generally without restraint.

From this author's travel around the country to view the cut flower industry (Appendix A), it should be noted that wholesalers report a pattern for florist bankruptcies. Wholesalers which carry a lot of the retailer's debt report that many retail firms seem to declare bankruptcy immediately after the holidays of Valentine's Day, Easter and Mother's Day. A few more firms are reported to linger until after the June wedding season, however. Certainly the summer lull in industry sales contributes to this pattern.

Many wholesalers also report that it is just as easy for a florist to reincorporate under another name and open a new shop with little fear of reciprocity from having previously reneged on debts through bankruptcy. Owners of such firms usually have to look to new suppliers for products, however. Wholesalers reported that new but unwary product suppliers are easily found.

Wholesale level. The market structure at the wholesale level of the industry varies from that of the retail segment in that market conduct often depends upon location. In large metropolitan areas, where many wholesale firms operate, conditions resemble that of perfect competition. However, in areas catering to smaller populations, the traditional wholesaling industry may approach that of an oligopoly or monopoly. In the smallest of locales, a retail florist may himself have to travel to a nearby market area for cut flower supplies.

Variances do occur. If one would include in the wholesale level all firms which distribute goods to retailers in an area, then

competitive forces may often be present though not necessarily apparent. Firms which drop ship product from distant cities to local firms or which run routes into various areas might be considered wholesale competitors, even in the face of a monopolistic situation locally. As such, entry into a market area might be considered free. Such does frequently occur. One California wholesaler specializes in distributing product, on regularly scheduled trucking routes, to retailers in Texas and Louisiana, thereby competing directly with local wholesalers there. Midwestern retailers in many small towns are serviced regularly by routemen from distant cities or by wholesalers who bus merchandise as ordered. One Midwestern wholesaler uses Amtrak to transport his product to distant cities, where a company routeman picks up merchandise and trucks it to various retailers along regularly travelled routes.

Goodrich et al. [1973] surveyed wholesalers in selected terminal markets and found that the majority of operators questioned could suggest no incentives for others to open a wholesale business in those markets. When asked about conditions which they considered deterrents to new wholesale businesses, operators noted the early and long hours and the hard physical work; others mentioned hiring and retaining competent labor, high capital requirements from maintaining wholesale credit practices, low rates of return on business and traffic and transportation problems. While Goodrich et al. [1973] revealed that noticeable pessimism was generated, it is interesting to note that no mention was made of competitive forces acting as a deterrent.

A major cost of entering the wholesale florist business must indeed be considered the maintenance of accounts receivables. Firms typically sell on credit to retailers, billing periodically, but they tend to pay

growers more regularly for merchandise received. Other costs of entering business might include rent, transportation facilities (vans, trucks, etc.), refrigerated units and inventory (perishables and non-perishables).

In another study by Powell et al. [1972] on shipping point practices of California and Florida shippers, it was noted that survey respondents indicated the existence of few barriers to entry to the flower growing and wholesaling industries. Cost and availability of suitable land were mentioned as barriers to entry by California shippers. References, suggesting possible deterrents, were made by both California and Florida shippers to the large investment requirements (for other than land), the unavailability of credit and the existence of foreign competition. Since the completion of this 1972 study, the existence of foreign competition has become an even bigger obstacle for domestic producers and wholesalers. Many wholesalers even believe importers and import-shippers will begin facing heavy competition among themselves, unless demand greatly expands (Appendix A).

One other minor barrier to entry in some cities may be space. In large cities such as Los Angeles, San Francisco, Boston and New York City, new business entrants desiring to locate in the same market areas as other wholesalers may have to compete with others for space. In the less prosperous periods of a business cycle, acquiring such space in most markets may be relatively easy, however.

Firm exit from the wholesale level, especially in the largest cities, may go almost unnoticed. In smaller cities and towns or areas serviced by routemen, the departure from the wholesalers' ranks will



probably be noted by clientele, suppliers and competitors. However, few will have trouble filling any voids created by such departures.

Grower level. Entry and exit conditions, investment considerations aside, are probably easiest at the grower's level of the industry, as here the business environment definitely approaches that of perfect competition. Any grower who raises decent product can, with only a limited marketing effort, sell that merchandise. (To insure continued profitability, a better than limited marketing effort is probably needed, however. Yet, there is a ready market for good quality product.) Seward Besemer [1980a] noted, after a recent tour of Europe, that he felt that only 30 percent of American-grown cut flowers would even sell on a Dutch or German auction market. Besemer felt domestic flower quality was not up to par with international standards.

When leaving the industry, seldom is a grower missed for his product's volume. Some may mourn the loss of particular growers for reasons relating to quality of merchandise, variety of selection, friendliness, etc. But only when an entire region's growing industry collapses, leaving the landscape littered with numbers of deteriorating greenhouses, does the public really seem to take note.

An entrepreneur entering the industry at the grower level may, depending on locality, find his greatest barriers to entry from factors such as the availability of adequate land and/or labor supplies, of water or water rights and of favorable zoning regulations or the like. While acquiring adequate financing may be the absolute biggest obstacle facing a prospective grower, these other factors often determine the ease with which a firm may establish. Once established, such

conditions may also force firm exit. Many growers have been forced out of business or pressured to relocate due to changing conditions which have developed around them, as neighboring cities or towns have grown. Changing zoning laws may inhibit further operations in such cases.

Certainly, one must consider the investment requirements for operating at the grower level to be the biggest barrier to entry; they can easily be the highest of any segment of the industry. Depending on crops raised, seasons of the year in which they are grown and location of the firm, a grower will need to rent/buy land and possibly build a greenhouse or other protective structure. Investment in tractors, plows, soil handling or mixing equipment, sprayers, pumps and numerous other pieces of equipment may also be required. The gamut may run from the grower establishing himself in the South, who needs no protective structure, to the northern rose grower, who needs expensive glass greenhouses (due to low light conditions), possibly supplementary lighting, and plenty of heat in order to raise a timely crop of roses for Valentine's Day.

Growers also need the investment dollars for equipment purchases related to handling a harvested crop. While these may vary with the crop and the particular grower's marketing scheme, equipment may include refrigerated units, trucks or vans, box strapping machines, ice making machines, grading machines, buckets, etc. There is a wide spectrum of such investment needs depending on how the crop is produced and marketed.

When leaving the industry, much of the equipment, sometimes including greenhouse structures, can be sold. While buyers may not be that plentiful, especially in hard economic times, there is a reasonable

chance that a grower may be able to recoup a fair part of his investment. Increased land values frequently have been the salvation for many growers. Expanding city limits have often been responsible for escalating land values and may, in and of themselves, be the impetus for firm exit from the industry.

#### Technology Characteristics and Changes in the Various Segments of the Marketing Chain

Changes in technology are not foreign to floriculture. Yet, the range of the rate at which technological advances do occur varies from the almost unnoticed pace at the traditional retail segment of the industry to the faster changing speed that occurs at the grower's level. Unlike changed methodologies in many other industries, few of floriculture's advances noticeably carry through the marketing channel with the product. Furthermore, adoption of new methods by the entire industry is often slow.

Hypothesis H12 of Chapter II and its accompanying ancillary hypothesis suggest that vertical coordination tends to speed the adoption of new technologies. Other factors are also said to occur as vertical integration develops, such as improved quality standardization and improved product and facility scheduling. Hence, one might expect to find the most technologically advanced firms among the most vertically integrated.

Evolution does take place, however. Most in the industry eventually adopt promising techniques. For the majority of the developments that have recently transpired at the retail, wholesale or grower levels of the industry, technology changes can, perhaps, be best

described as being labor-saving, product-saving and energy-saving, respectively.

Retail level. At the retail level of the industry, few technology changes seem to materialize. Flowers still must be cared for and arranged or boxed by hand. Labor is, therefore, of the utmost importance. Capital requirements, relative to other segments of the industry, become almost non-existent.

While the mass market cut flower phenomenon can unquestionably be considered in its infancy, the traditional retail segment of the industry is far from sophomoric. The typical mass marketer is changing, although slowly, from the use of buckets to the use of refrigerated units. (Kress, in 1979, reported that one-third of firms surveyed planned an increase in the use of coolers in the future, while over three-fourth of the stores involved were still using buckets only, for fresh flower display. By 1982, only 66 percent of those mass marketers regularly carrying cut flowers were still using buckets and 24 percent claimed they planned to increase use of coolers [Kress et al., 1983].) Hence, potential technology changes related to capital investments can be considered great here.

At the traditional retail level, however, technology changes are so few that they go almost unnoticed. Some minor changes, mostly attempting to save valuable labor time, have occurred in the form of innovations. Florists today have access to such devices as motorized rose and flower strippers, designed to defoliate flower stems and dethorn roses. Glue guns, used when adhesives are needed to hold flowers or foam in place, and picking machines, which mechanically

attach steel picks to dried and artificial flower stems to facilitate arranging in plastic foams (e.g., Styrofoam), have also become widely available. Computer terminals, largely the result of efforts by the wire services, have somewhat modernized the methods by which wire orders are transferred around the country or around the globe. These same terminals can now be used in bookkeeping and non-perishables inventory control and may conceivably be used for cut flower procurement as well. (FTD [1982c] reports that 41 percent of its members had installed an FTD Mercury console in 1980, while 3 percent of members also had their own computers. Many firms also send book work to computer services firms.)

Artistry and service, being the two mainstays of the traditional retail florist industry, have not seen many new technology developments. Designs do of course change, and some of the newer ideas have been focused on reducing flower use in arrangements. Most of these efforts have been aimed at keeping costs of the finished product down rather than specifically saving labor [Trick, 1980]. Other attempts have been made which suggest the mass production of selected designs; however, these are often shunned as lacking personalized attention. Yet, as Joseph Howland [1982] suggests, these may indeed become the prominent method by which most shops reduce labor costs in the future.

Perhaps the biggest changes in cut flower retailing, but not true technology changes, have been in the way retailing itself is conducted. Independent structures have in some cases given way to firms establishing shops in malls and neighborhood shopping centers. (FTD [1982c] reported that 12.1 percent of its members' shops were located in shopping centers in 1980. This compared with 16.5 percent and 4.7 percent in 1975 and 1970, respectively.) Many firms have expanded into

multi-unit shops. (FTD [1982c] notes that 7.9 percent of member ownerships were multi-unit firms in 1980; this was up from 3.7 percent in 1970.) Today, some traditional firms and probably the majority of mass market firms have chosen to specialize in cash-and-carry merchandise at one or more of their outlets (e.g., Bachman's, Inc., which operates nearly 50 European Flower Markets (in Minnesota and Wisconsin) offering cash-and-carry flowers and plants [Nicholas, 1981].) The most significant change in retailing of cut flowers, brought by the selling of flowers at non-traditional retail outlets, need not be elaborated on further here.

Wholesale level. Technological changes that have occurred between the grower level and the retail level are many, although they too may go unnoticed by many. The retailer still telephones or visits the local wholesaler, or is himself phoned or visited by a routeman in much the same way as he has been for years. Refrigerated units, where present at the wholesale level, are not that different technologically either, although thermostatic controls may better regulate the temperature and air purifiers may better clean the atmosphere.

However, real changes have occurred at the wholesale level. These have largely involved the lengthening of flower life or other related ideals aimed at getting flowers to market sooner, rather than involving new technologies which might alter the large amounts of labor needed (to warehouse and care for cut flowers). Preservatives, related chemical applications (e.g., silver thiosulfate) and the use of pre-coolers and deionized water have all been great technological advances aimed at lengthening the useable life of cut flowers. Their cost, especially on

per flower basis, has been relatively minimal, hence speeding their acceptance by much of the industry. Nevertheless, a margin for further adoption definitely exists. The Society of American Florists' Chain of Life Program has helped to inform industry participants of the need for further use of such technologies.

Changes in transportation have also been a major technological development for the industry. The airlines' capacity for satisfactorily transporting huge quantities of flowers over large distances has literally created a world market for flowers. Outputs from Central and South America, Europe and Israel can now directly compete with those of domestic growers as a result. Domestically, truck and air transport, along with advances in the handling of product out of water, have allowed growers to congregate in areas of climatic comparative advantages and then ship product to areas of high consumption. Continuing research on improving handling and transportation techniques promises to stimulate further changes in the future.

Finally, mention should be made of changes occurring mostly at wholesale which have affected cut flower merchandising. Many wholesalers now offer retail clients mixed bunches of flowers and, in at least one case in the Chicago area, standardized flower arrangements in containers; these have been most widely adopted by mass market retailers who do not staff their outlets. Some traditional retailers have purchased these as well. Some wholesalers also provide the services of maintaining displays at local mass markets. Such changes, at least initially, have added to the labor burdens of wholesalers. However, some added labor requirements at wholesale may be considered essentially labor transfers from the retail segment of the industry.

Some of the wholesaling segment's merchandising changes have spawned technological changes as well, as middlemen attempt to keep labor requirements minimized. At some firms, inventory management has become a science with the use of computers. Several operators have devised assembly line-type machines for mixed bouquet construction. Others have developed various apparatuses to aid in servicing of mass market outlets, from automatic preservative injectors (into the water supply) to bucket cleaning machines. Other efficiencies are sure to develop if wholesalers assume further responsibilities.

Grower level. The most notable technology changes in the cut flower industry over the last few decades have undoubtedly occurred at the grower's level. Changes in greenhouse structures and technologies have included everything from new building materials and greenhouse glazings (e.g., acceptance of aluminum and plastic) to the use of heat blankets and vented convection tubing for improved climate control. New watering systems include mechanical and computerized timers for scheduling waterings to new misters, watering pads and other water delivery mechanisms.

Changes in cultural methods of the various cut flower crops have also been numerous. Research into artificial control of daylength and the photoperiodic responses of various cultivars has made many species better candidates for year-round cut flower production. Daylength, temperature, water and fertilizer modifications have enabled growers to time crops for various holidays with reasonable accuracy. Growers' approaches to pesticide application, fertilization and watering have been transformed toward the more scientific. Tissue culture has



literally revolutionized plant propagation. And plant breeding has yielded new and improved variations of many plants and, in some cases, has made floricultural crop production an economic reality.

Probably the biggest group of technology changes to occur in the greenhouse in recent years has to be related to energy conservation. With the advent in the 1970s of the Arab oil embargoes and the resulting increases in fuel costs, much work has been done to find alternate energy sources and improved methodologies for conserving energy in greenhouse culture. While some of the changes have seen newer cultivars developed that can be successfully produced at cooler temperatures, other technological improvements have involved direct reductions in energy use. Heat blankets, which reduce the heated greenhouse space (Figure 3-5), double-wall construction, which increases insulation, and similar alterations have increased energy-use efficiency. Some growers have made modifications to take advantage of the sun's energy. Others have taken into account physical properties by planting windbreaks or relocating heating pipes to allow warm air to rise.

The late 1970s and early 1980s have even seen some firms alter their energy sources in an attempt to keep operating costs at a minimum. Hence, some firms have switched to burning waste products [Anonymous, 1981b] and using waste heat from power plants [Friday, 1982], if sources for same can be found nearby. New England sports several firms which have modified their boilers to burn the woodchip and sawdust by-products of lumber mills and cabinet makers (Appendix A). Several cases of geothermal wells being used to heat greenhouses have been reported [Young, 1981; Leavitt, 1981; Anonymous, 1981c].

Yet, with all of the technological innovations that cut flower growers have made, operators are probably still disheartened due to the inadaptability of many advances that have pervaded other ornamental horticultural enterprises. Potted plant producers, for instance, have developed many machines for handling and mixing soils, filling pots and moving product that are not immediately adoptable by cut flower growers. Roller benches, which allow for the elimination of almost all aisles in the greenhouse and, hence, better utilization of the controlled environment, are not readily transferable to most cut flower operations because of the use of ground beds and/or the heavy weight of soil.

However, as Seward Besemer [1980b] has pointed out, many techniques that are used in other parts of the world have just not been widely adopted in the United States. Track mounted moveable greenhouses, which when conditions necessitate, are moved over an outdoor bed in which a crop has been started, are just one example. Containerized production of cut flowers, use of portable benches for forcing bulbs for cut flower sales and other techniques have all been used elsewhere with little notice by domestic growers. Although mechanization is still not as applicable to the production of cut flowers as it is to that of other crops, some improved technologies are now available.

Although the growing segment of the cut flower industry typically has the largest capital demands, extensive labor is still needed. Labor requirements for crops, in terms of man-hours, do vary tremendously. Some crops require hand disbudding and staking. Harvesting is uniformly a hand operation, but labor for flower grading varies widely. Some crops are sold virtually ungraded, while others are graded extensively by hand. Many growers have developed machines, several quite elaborate,

to aid in their grading operations. A number of growers have modified their product mixes to move away from some of the more labor intensive crops; others find that such moves by fellow growers create niches for specialized production of the abandoned species. Few innovations outside of some breeding improvements have been made to reduce such labor requirements. Chapter III outlined various labor needs for the major cut flower species, and Appendix A reports on some of the more noticeable changes occurring in the industry in this regard.

#### Characteristics of Cost Functions and Average Sales Level

A firm's costs are typically segregated into fixed and variable costs. As data are not always available on specific categories of costs for all segments of an industry, proxies for some can sometimes be examined. Such proxies might reflect the levels of investment in fixed assets (hence, reflecting some fixed costs) or the levels of variable factors) will be examined here in an attempt to describe characteristics of the cost functions of the various segments of the cut flower industry.

In addition, the average sales volumes for firms at the various market levels will be described. These may provide a guide to total sales volumes required to cover costs and to the sales levels for which various fixed assets are being used for support. It should be noted, however, that most of these reports are for total firm sales and do not pertain only to cut flower sales.

Retail level. At both the traditional retail florist shop and at the retail mass market, costs are typically largely variable in nature.

As such, the costs are largely related to the number of units sold. Part of this determination is due to the fact that only minimal investments are needed for fixtures (fixed assets). As previously described, it is estimated that a traditional retail shop could be opened for as little as \$10,000 to \$20,000 in fixtures. A mass market outlet can be opened for considerably less. Although more lavish appointments may be desired with time, the major costs of doing business at retail, those for flowers, accessories and labor (services), are definitely variable. The fact that much of the business in the florist industry is seasonal enhances this claim; much of the labor used in the retail industry potentially could be part-time or seasonally employed and hence is probably not salaried.

FTD [1982c] and the 1977 Census of Retail Trade [U.S. Bureau of the Census, 1978] provides much specific information which can be used to describe sales of average flower shops. The 1977 Census of Retail Trade reported that, for retail shops operating the entire year, average sales were \$88,895. Only 4 percent of all shops experienced sales of \$300,000 or more, although 25 percent of retail shops had sales between \$100,00 and \$299,000. Table 6-4 gave the sales breakdown for retail florists operating the entire year.

Only about two-thirds of all retail florists had paid employees in 1977. For the 68.7 percent of shops with hired help, payroll averaged 21.5 percent of sales. Average employment was 4.7 persons per shop (during the first quarter of 1977). Only 29 shops reported employing 50 or more persons, and only 7.3 percent of all shops engaged as many as 10 persons. When accounting for multi-unit firms (564 multi-unit firms were reported in 1977, only 30 percent of all enterprises employed

10 or more persons [U.S. Bureau of the Census, 1977 Census of Retail Trade, 1978].

FTD [1982c] data can be equally revealing. For single-unit member shops, average shop sales in 1980 were \$150,200. However, the sales of the median single shop were considerably less at \$108,600. More single-unit shops reported sales of \$122,300 than any other amounts (mode). Similar sales data for multi-unit ownerships are \$387,500 for average sales, \$270,300 for median sales and \$237,500 for the mode sales in 1980.

FTD [1982c] noted that firms employing greater numbers typically reported fewer sales per employee. The overall average sales per man-hour for single-unit FTD member shops in 1980 were \$11.49, although the median sales per man-hour were only \$11.23. Top-metropolitan area single-unit shops were more productive than were other metropolitan area shops; non-metropolitan area single-unit shops displayed the lowest productivity in both average and median sales per man-hour. For multi-unit shops, average sales per man-hour were \$13.43 in 1980; however, the median sales per man-hour were \$15.10. Top-metropolitan area average sales per man-hour (\$13.51) and non-metropolitan area average sales per man-hour (\$13.57) were both higher than the \$13.14 sales per man-hour average for the other metropolitan area multi-unit shops. The median sales for man-hour for top- and other- metropolitan area multi-unit shops (\$15.76 and \$15.78, respectively) both out-distanced the \$12.08 median sales per man-hour level of non-metropolitan area stores.

FTD [1982c] also revealed a summary of median figures for 787 profit and loss statements volunteered by members. Costs of goods sold

was reported as 44.2 percent of sales, although another 3.1 percent of sales were listed as design expenses (other than salaries). Gross profit might then have been 52.7 percent or 55.8 percent of sales. (This excluded receipts not affecting inventory, e.g., delivery and service charges, outgoing wire orders, etc.) Salaries for employees were 22.5 percent of sales; total salaries, including those of officers, were 25.7 percent of sales. Delivery expenses, occupancy costs, administrative expenses, marketing expenses, operating expenses (bad debts, insurance, etc.) and taxes were a median 11.4 percent, 5.1 percent, 2.7 percent, 1.1 percent, 4.4 percent and 4.1 percent of sales, respectively. The median net profit (loss) was 3.6 percent of sales, although the high and low were 17.7 percent and -9.8 percent of sales, respectively.

FTD [1982c] reported a dollar volume barrier for traditional retail flower shops over which it seems difficult for sales volume to grow. In both 1975 and 1980, this dollar volume barrier appeared to be in the \$200,000 to \$299,000 range. (The 1977 Census of Retail Trade data in Table 6-4 also depicted this barrier for all florists.) FTD reported two barriers for multi-unit shops in 1980; the first was also at the \$200,000 to \$299,000 range. A second barrier was found at the \$1 million to \$1.5 million sales level.

Comparable data for mass marketers dealing with flowers are limited to sales figures (although Table 6-5 offered a breakdown by sales level for total supermarket sales). According to Kress [1979], 41 percent of the stores with regular floral sales outlets recorded weekly sales of less than \$250 for all floral categories in 1978. At the same time, 21 percent of such stores registered weekly floral sales greater than \$800.

Firms handling floral items on only a seasonal basis, however, posted fewer sales; 75 percent of such firms had weekly sales of less than \$250. It should also be noted that cut flowers only represented about 10.4 percent of total floral items sold in the supermarkets studied. By 1982, Kress et al. [1983] found 25.9 percent of stores regularly handling floral items grossing over \$1,250 per week. Only 21.2 percent of these stores had sales of less than \$250 per week. Of those stores handling floral items only on a seasonal basis, 57.7 percent reported weekly sales of \$250 or less. By 1982 cut flower sales represented 16.9 percent of floral item sales.

One other fact which Kress [1979] reported is that supermarkets with permanent floral departments had an average of 197 square feet of space devoted to floral sales in 1978. This figure had increased from an average 154 square feet of space reported for 1976. By 1982, permanent floral departments had grown to an average 293 square feet [Kress et al., 1983]. The small space used lends credence to a conclusion that only minimal investments need be made for fixtures at the mass market. Hence, the majority of costs are likely to be variable costs.

Wholesale level. The 1977 Census of Wholesale Trade [U.S. Bureau of the Census, 1979] provides many data about the merchant wholesaler and some information about the group of floricultural agents, brokers and commission merchants; these lend credence to the statement that wholesale trade costs are about half payroll related and about half overhead and other expenses. Determination as to whether costs are considered mostly fixed or variable, then, would be

determined by the accounting treatment of labor, i.e., whether labor is largely salaried (perhaps a fixed cost) or employed on the basis of an hourly wage (often considered a variable cost, especially if no minimum hours are guaranteed paid or if on a part-time basis). Other costs at wholesale are required for warehouse space, refrigerated units, delivery vehicles, etc., where applicable, and for inventory.

Merchant wholesalers operating for the entire year reported sales which averaged \$777,630 per firm in 1977. Agents, brokers and commission merchants reported sales averaging \$2,246,595 per firm. Industry-wide sales for all wholesale firms, including those not operating the entire year, averaged \$794,698 per firm [U.S. Bureau of the Census, 1977 Census of Wholesale Trade, 1979].

Table 6-2 gave a breakdown, according to size, for merchant wholesalers operating the entire census year. As the table showed, the top 40 percent of the firms handled over 84 percent of the wholesale sales made by merchant wholesalers in 1977. These sales represented about 83 percent of all wholesale flowers and florists supplies trade. Another 2.6 percent of wholesale sales were made by merchant wholesalers not in business the entire year, and about 14.5 percent of wholesaler sales were made by agents, brokers and commission merchants [U.S. Bureau of the Census, 1977 Census of Wholesale Trade, 1979].

The 1977 Census of Wholesale Trade reports on employment size of firms and expenses (including payroll) for merchant wholesalers. These firms employed an average of 9.9 employees each, but 12 firms employed at least 100 employees. Operating expenses (including payroll) accounted for 25.8 percent of merchant wholesalers' sales volumes.



Table 6-3 listed employment, by principal activity, of wholesale trade employees.

There was a tendency for firms employing larger numbers of workers to incur higher total operating expenses (including payroll), as a percent of sales, than those employing fewer workers. Firms employing 20 to 49 persons, 50 to 99 persons and at least 100 persons incurred average costs equivalent to 29.1 percent, 29.0 percent and 28.4 percent of sales, respectively. Firms operating with fewer workers averaged costs, as a percent of sales, below the 25.8 percent overall average. The additional costs did not always appear to be directly attributable to payroll costs, however. While payroll costs for all merchant wholesalers averaged \$101,483 or 50.5 percent of average total expenses (\$200,956), payroll costs for those firms employing 20 to 49 persons and 50 to 99 persons, were 51.6 percent and 54.3 percent, respectively. For those firms employing over 100 persons, though, payroll costs were only 47.2 percent of total operating expenses [U.S. Bureau of the Census, 1977 Census of Wholesale Trade, 1979].

Finally, the 1977 census also gives some insight into the use of warehouse space by the wholesale segment of the industry. Warehouse space, if not owned (a fixed asset), is usually rented, typically on an annual basis. As such, it represents a fixed cost of doing business. The 1,754 merchant wholesalers with warehouse space averaged \$823,701 in sales for 1977; they held \$77,417 in inventory at the end of the year in an average 9,774.2 square feet of warehouse space. The 579 merchant wholesalers operating without warehouse floor space averaged considerably fewer sales annually at \$390,883, or over 52 percent less; they

held \$19,456 in year-end inventory [U.S. Bureau of the Census, 1977 Census of Wholesale Trade, 1979].

For agents, brokers and commission merchants, the picture relating sales to warehouse space was less differentiated than for merchant wholesalers. The 67 agents, brokers and commission merchants with warehouse floor space averaged \$2,349,075 in annual sales, while the 59 firms with no warehouse space averaged \$2,130,220 in sales (only about 9 percent less). Agents, brokers and commission merchants with warehouse floor space occupied an average 9,134.3 square feet at the end of the year and held an average \$55,209 in inventory at year's end. Those without warehouse space held about \$4,746 in year-end inventory [U.S. Bureau of the Census, 1977 Census of Wholesale Trade, 1979].

Grower level. Costs at the grower level are very dependent on location, crop, method of growing, greenhouse structure, if any, and growing techniques utilized. Many of the costs are fixed. Large amounts of capital are needed for fixed assets, e.g., greenhouse structures and equipment. In addition, many growing costs, e.g., heating in winter and cooling in summer, must be at least partially incurred irrespective of the particular production level of a greenhouse or greenhouse range. Some crops require investments in plant material that have expected paybacks occurring over a multi-year production period. Roses, for instance, are normally left in the greenhouse bed for several years. Carnations typically are relied on for production for two years. Orchid production may require several years before initial flower cuts can even be made.

Production is very labor intensive. Labor is required for planting and harvesting crops and, depending on varieties and species raised, extensive labor may be required for tasks such as disbudding, staking, tying or propagating of crops. Although regular labor crews are often fixed in size, many firms hire part-time help at planting or harvest times. Grading crews are also frequently part-time as their services may only be needed for a few hours a day during harvesting periods. As such, many of the labor costs incurred may justifiably be considered variable costs. Chapter III gave an indication of the diverse requirements for various crops.

Obtaining adequate returns requires careful management. In 1981, the returns generated per square foot of domestically produced pompon chrysanthemum production at the grower level averaged \$1.31 according to the USDA's Floriculture Crops [1982]. Returns for standard chrysanthemum were slightly higher at \$1.56 per square foot, and those for standard carnations, miniature/spray carnations, hybrid tea roses and sweetheart/miniature roses were \$2.02, \$2.22, \$3.93 and \$4.26 per square foot, respectively. Gladiolus returns were \$3,824 per acre. At the same time, total heating costs (including costs of energy, maintenance, repair, interest, property tax, insurance and capital costs) for various commercial greenhouse systems for a 30,000 square foot, southern Michigan greenhouse heating comparison test conducted in 1980 ranged from \$1.89 to \$2.90 per square foot, depending on the system [Rotz and Heins, 1980]. Heating costs alone, depending on heating system, location and crop do not leave even the average (southern Michigan) grower with much margin for error in management.

Production area data and sales averages per grower for various crops give an indication as to the average 1981 firm's operations. For standard carnation production, the average producer sold \$123,674 in carnations from 61,175 square feet of production area. Miniature/spray carnation producers sold an average \$54,266 using 24,424 square feet of area. Those producing chrysanthemums yielded \$31,351 in average sales from 20,112 square feet of space for standard varieties, while pompon producers sold an average \$44,766 of flowers from 34,094 square feet of space. Rose producers had the highest returns, yielding \$405,568 in average sales from 103,248 square feet of space for hybrid tea rose production. Those producing sweetheart/miniature roses averaged \$184,641 in sales using 28,650 square feet of production. Gladiolus producers averaged \$343,172 in sales using 90 acres of growing area [USDA, Floriculture Crops, 1982].

#### Financing and Credit Characteristics

Financing and credit methods for the cut flower industry do not differ drastically from those of other industries. Growers, wholesalers and other middlemen and retailers all can seek bank loans. Finance companies and insurance companies (looking for places to invest monies collected from premiums) can also be tapped for financial assistance. When financing becomes problematic, wholesalers and retailers are eligible for Small Business Administration assistance as are other firms; growers may seek either insured or guaranteed loans from the Farmers Home Administration for operating or ownership purposes.

Other investment capital opportunities occasionally come from members of the marketing channel who may make loans to entrepreneurs with the promise of future supply arrangements.

One financing mechanism of many service and retailing industries that is not prominent in the floral industry is franchising. While many retail firms expand by opening new units, there are only a few franchising opportunities for entrepreneurs in the florist trade. These have all been developed since the early 1970s. Buning the Florist, Inc. (of Florida), Flower World of America (a nationwide firm) and Conroy Flowers (of California) are three firms which have been involved with franchising operations, with varying successes.

Venture capital has occasionally been sought from or infused into the industry by large conglomerate agricultural or consumer products firms which have made acquisitions in floriculture. Such entries have been on both the production and retailing ends of the market channel. The floral supplies area is also represented by a national consumer products firm. During the 1970s, the tropical foliage plant boom attracted many such firms to floriculture, but their investments have not met with uniform success. The labor intensive nature of the industry has often been cited as the stumbling block for many of these firms, some of which have left the industry. Nevertheless, today conglomerates own seed companies, greenhouses, fertilizer brands and marketing mechanisms. One conglomerate even owns a group of independently run retail flower shops.

In his 1967 report, Havis noted that nearly one-third of all florists surveyed borrowed money. Half of those who borrowed money secured it for working capital. Remodeling was cited as the reason for

borrowing by 18 percent of the florists, while expanding the business and financing delivery vehicles were each cited as the reason for borrowing by 11 percent of the florists surveyed. Other reasons were cited by the remaining 10 percent. Havis [1967] also noted that only four out of every 100 florists surveyed were refused loans. Insufficient collateral (38 percent of those refused), poor profit records (26 percent), first-time borrower (20 percent) and others (16 percent) were the reasons cited for loan refusals.

As with many other industries, entrepreneurs are able to finance their inventories at least partly by credit issued by suppliers. Growers regularly provide product to wholesalers on other than a cash-only basis. Wholesalers pass similar assistance on to credit-worthy retailers. Retailers, too, make many of their sales on an in-house credit or local or national credit card basis. Havis [1967] reported that 95 percent of florists offered credit in 1964-65. Sales of these florists were made on credit 73 percent of the time.

In a 1973 USDA report on terminal wholesale markets, it was reported that most wholesalers deemed credit sales an important part of their marketing strategies. Wholesalers reported that 90 percent of sales were made on credit, which was generally extended interest-free for at least 30 days. While some firms reported extending credit for up to 90 days without charge, only in the South and West were wholesalers reported to be more constraining; in these regions, 70 percent of the firms charged interest on accounts after 30 days. Other firms established maximum credit limits or changed delinquent clients to a cash-only basis [Goodrich et al., 1973].

One of the changes the industry has seen recently in the credit arena has involved mass marketers. In many cases, mass marketers have been known to pay for product much faster than members of the traditional industry. This has often eased mass market entry into the traditional channels of supply [Lavagetto, 1982]. Some growers and wholesalers have expressed preferences for dealing with mass marketers as a result (Appendix A).

One money-handling mechanism unique to the flower industry is that of the wire service clearinghouses. FTD was originally founded as a means of facilitating the handling of payments for telegraphed flower orders. While individual florists that knew each other had previously experimented with inter-city orders, FTD was initially established by the Society of American Florists (SAF) so that a telegraph delivery arrangement, complete with a payment-guaranteeing trust fund, could be instituted on a larger basis [Williams, 1960]. FTD was eventually jettisoned as a separate organization from SAF. However, it still serves (alongside its competitors with similar operations) as a clearing-house for accredited members to process and guarantee payment of orders from city to city and florist to florist.

#### Specialization and Diversification of Firms in the Industry

Degree of species specialization and diversification. The range of diversification at the growing level of the marketing chain ranges from the very specialized to the very diverse. There are many growers, for instance, whose only cut flower crop is roses, only carnations or only gladioli. Most, however, probably have some amount of diversification in their operations, although different greenhouse ranges may

account for the alternate crops. Many firms operate in more than one area of floriculture or agriculture, as witnessed by several Florida gladiolus growers who may raise citrus, beef cattle, tropical foliage and/or baby's breath along with their gladioli. There are numerous growers who "specialize in diversity," claiming that their broad product line is the tool that maintains their market niche. Some firms specialize in raising crops of other than the major cut flower species, producing well over 10 minor species.

In the short run at least, growers may sometimes be limited by their assets. Although glass greenhouses are easily used for many crops, plastic greenhouses may, at the more northern latitudes, pose crop restrictions due to their less translucent nature. Production practices may further restrict ease of diversification, as some crops can be grown on greenhouse benches, while others are necessarily planted in ground beds (e.g., orchids versus roses). Some operators can modify their facilities to suit production of other crops with only moderate costs, however.

At the wholesale level, most firms have already broadened the industry's product line to carry a wide range of species. Yet, there are some instances of wholesalers specializing in only one or a few species; they will often inventory a wide range of varieties, cultivars and colors of each. These cases most notably (but not exclusively) occur at the largest terminal markets, as represented by Los Angeles, San Francisco and Boston, where many wholesalers are simply sales outlets for specific growers. Some large grower-shippers also specialize in this manner.



At retail, specialization is rare. The mass market is somewhat specialized at times, as certain stores may only carry seasonal or holiday plants or only foliage plants and potted blooming plants. Kress [1979] pointed out that 16.2 percent of mass markets surveyed handled cut flowers regularly, while another 6.2 percent handled them on a seasonal basis only in 1978. This compared with a 46.2 percent regular basis and a 14.3 percent seasonal basis inventorying of potted plants, an 8.9 percent regular basis and a 25.8 percent seasonal basis inventorying of bedding plants, and a 42.4 percent regular basis and a 1.8 percent seasonal basis inventorying of accessories. In 1982, 23 percent of the firms surveyed handled cut flowers on a regular basis, while 15 percent had seasonal interests. This compared with regular and seasonal inventorying, respectively, of 53 percent and 19 percent for potted plants, of 19 percent and 27 percent for bedding plants and of 42 percent and 6 percent for accessories [Kress et al., 1983].

At the non-mass market retail outlets, species specialization is not common. While the 1970s tropical foliage plant boom saw a proliferation of plant boutiques [Sullivan et al., 1980, pp. 65-66], instances of species specialization for those handling cut flowers at retail are not known to this author. There are many firms which, for inventory control purposes, do not handle a large number of species; however, there are no reported instances of "Carnation Corners," "Daisy Dens," "Orchid Outlets," "Marigold Marts" or the like. There are, nevertheless, retail firms which either specialize in or provide only some of the services which may normally be associated with full service outlets. Hence, firms specializing in party needs or wedding work do exist, and the telephone company's Yellow Pages of even a small city may

provide documented cases of florists listed under the headings of "Party Planning Service," "Wedding Consultant," etc. Flower shops located in airport, hotel or hospital lobbies provide other examples of what are usually specialized-service shops.

Integration. Another aspect of firm diversification involves integration. Vertical integration, or the expansion by a firm into other levels of the marketing channel, horizontal integration, or the expansion of a firm by replicating its current structure into multiple units, and integration of a firm into the conglomerate structure of another firm all occur in floriculture. Furthermore, cases of these types of integration occur at all levels of the cut flower industry.

Hypothesis H23 of Chapter II suggests that an industry experiencing little growth or decline and few technical changes would be expected to be organizationally stable. The technology transformations described above and the pressures domestic growers face due to import competition, rising fuel costs and other economic issues might suggest that the cut flower industry is ripe for integration activity. Indeed, such activity is common.

The first part of this chapter depicted the production and marketing channels of the cut flower industry (Figure 6-6). In that discussion, it was noted that several firms have bypassed neighboring market channel participants and absorbed the responsibilities previously provided by others. Thus, the industry finds grower-retailers, grower-wholesalers, grower-shippers and firms which only grow, all engaged in crop culture. Wholesalers, too, have sometimes moved into the retail and/or grower levels of the industry. Retailers, including at least one

mass marketer, have on occasion also bypassed adjacent market channel participants to manage some of their own growing operations.

Vertical integration, however, includes not only the bypassing by firms of adjacent market channel participants but also the acquisition of firms by neighboring firms for (the same) reasons of increased profit potential, improved capital management or the like. Hence, the movement of firms to acquire growing, wholesaling and/or retailing operations to create at least a partially self-sufficient marketing channel is included in vertical integration.

It is often the larger capitally endowed firms that have either undertaken the task or resulted from such integration. Hypothesis H21 (Chapter II) submits that large firms enjoy advantages when vertically integrating because of their better ability to absorb the risk and the administrative burden involved. Indeed, one finds large firms like Bachman's, Inc., which operates growing, wholesaling and retailing operations or Hill's Roses, which operates an extensive wholesale operation (Hill Floral Products, Inc.), to market the produce from one of the world's largest rose production facilities.

Another form of vertical integration in the industry includes the many firms which are directly related to foreign growing operations. These firms own the production ranges and have personnel stationed in the U.S. to handle distribution of the imported produce, hence conducting both production and initial wholesaling. Many of the foreign firms simply translate the name of their firm into English when establishing their distribution operations in the United States.

As evident in the industry are cases of horizontal integration. Horizontal integration, which may be for purposes of creating economies

of scale, increasing market share or the like, also has profit potential and/or capital manipulation as its motive. Hence, FTD [1982c] noted that multi-unit ownership of retail florist shops rose to 7.9 percent of ownerships in 1980 from 3.7 percent in 1970.

FTD [1982c] also reported that, in 1980, 28.4 percent of its membership owned other businesses besides their florist shops. Although some of these were related to the flower business (549 retail florists also owned wholesale florist businesses, 148 owned bridal shops, 158 owned funeral homes and 820 owned gift shops), many were not. Some FTD members reported owning drug stores, travel agencies, grocery stores, bowling alleys, barber shops or beauty salons, car dealerships, lumber companies, collection agencies, cattle ranches, taverns, bookstores, car washes and others.

At wholesale, there are many cases of horizontal integration as well. While some wholesale outlets may have originally developed as distribution arms of large growers or growing organizations (hence, vertical integration), e.g., Hill Floral Products, Inc., or Denver Wholesale Florists, Inc.'s American Wholesale Florists units, their replications can definitely be considered cases of horizontal integration. Other firms in the industry exemplify horizontal integration. Other firms in the industry exemplify horizontal integration at strictly the wholesale level. Witness the Pennock Company, which has units scattered throughout the Atlantic seaboard states, and the Oscar E. Carlstedt Company, which has locations throughout the southeast.

Perhaps it is at the grower's level that horizontal integration is not as well defined, yet it definitely exists. Horizontal integration at the grower level may be as simple as a grower adding another field,

greenhouse and/or crew. There are also cases at the grower level where entirely separate growing facilities are established. Several Florida growers were once or are still related to firms from the Northeast or Upper Midwest. Similarly, many domestic firms have established growing operations in Central and South America [Smith, 1981]. These can both be considered cases of horizontal integration.

Integration within the cut flower industry involving conglomerates is not that common, yet it, too, has occurred. The motives usually relate to increased profits or improved capital management (seasonality or leveling of cash flows, etc.) as portrayed by particular market or marketing expertise for related products or product lines. Consequently, floriculture has seen large consumer-products and agricultural corporations, such as Beatrice Foods, Gillette, Pillsbury and Purina, try to mesh everything from seed companies to retail sales of cut flowers and plant accessories with their existing operations. Many conglomerates have left floriculture, too, claiming benefits sought were never realized; others remain. Service Corporation International, for instance, owns 17 traditional flower shops nationwide and offers a flower service at 13 of its 189 funeral homes [Joseph, 1981].

Some merger activity does occur in the industry, but it is generally not much of an issue. Mergers of several companies into one seldom takes place, unless it involves firms with common or related owners or which have large amounts of interrelated business. The subsequent companies typically have managements consistent with those of the previous establishments. Probably a more common occurrence in the industry is for a firm to be purchased by a new industry participant or for a firm to go completely out of business.

Form of business ownership. The floriculture industry is dominated by small firms, and it is probably this dominance that keeps the industry out of the corporate spotlights. Among traditional retailers, proprietorships prevail as the most common type of business organization. The 1977 Census of Retail Trade [U.S. Bureau of the Census, 1978] reported that, in 1977, there were 19,524 individual proprietorships (with sales of \$1,117,848,000), 6,091 corporations (with sales of \$967,186,000), 3,722 partnerships (with sales of \$309,725,000) and 38 firms with other forms of legal organization (with \$5,269,000 in sales). Mass marketers, of course, are largely corporations, but their participation in the cut flower industry as a portion of corporate sales, assets or profits is minimal. There may also be numerous other flower shops operated as units of other firms that are omitted from the census data because of their less than traditional business organization.

At the wholesaling and growing levels of the industry, many firms are established as corporations. However, many entrepreneurs still operate by themselves (as proprietorships) or with only minimal financial help or hired labor. Partnerships are common, many of these being organized among family members of the same or successive generations.

#### Coordination within the Subsector

The coordinating mechanisms that operate within a subsector often determine the success or failure of market operations as a whole and of many of the establishments operating in the market channel in particular. The handling of perishable cut flowers makes smooth

coordination essential. Coordination directly reflects on the efficiency with which the industry operates and the condition of the product delivered to the consumer. Sullivan et al. [1980, p. 10] submit that the relatively uncoordinated marketing channels are one of the most notable characteristics describing the floriculture industry.

The hypotheses of Chapter II offer many thoughts on coordinating practices. For instance, hypothesis H2 suggests that the greater the number of parallel channels that exist in a vertical market structure, the greater the array and range of coordinating practices used. Figure 6-6 showed that there are many parallel channels in the cut flower industry. Hypothesis H3 suggests that, the greater the number of intermediate units in a vertical channel, the greater the rise of spot transactions. Hypothesis H4 counters with the theory that, the greater the perishability of the product, the more likely that coordinating practices will trend toward the administrative, highly specific agreements. Hypothesis H5 submits that, as technical inefficiencies increase, the greater the number of intermediaries. Finally, hypotheses H6, H7 and H8 suggest that, with movement away from spot-type transactions and toward highly specific agreements, the greater the technical efficiencies, the greater the allocative accuracy (in both qualitative and quantitative terms) and the slower the rate of change in adoption of new practices, technology and product forms by market participants. Obviously, coordination affects industry performance.

This section will describe the coordination task operating in the cut flower industry, the importance of various product characteristics to this task and the mechanisms and pricing elements that affect coordination in the industry.

### The Complexity of the Coordination Task

Variability of subsector organization. The cut flower industry is composed of multiple marketing channels, as was depicted in Figure 6-6. Hence, the organization of this subsector becomes a very complex task. What may adequately describe the subsector's coordination in one locale or for one business may not provide a satisfactory description for that found in another instance. Coordination may even differ for different crops and among different suppliers.

To describe the way in which product passes through the market channel, one must first examine the particular firms involved. A grower-retailer, for instance, may produce some of each of the crops he sells or all of only one or two crops that he retails. Another retailer may have several different sources for all materials and may purchase goods totally based on price. Many wholesalers may carry carnations from Colorado, California, South America and local producers, while others may rely on only one source. Furthermore, there are cases where growers promise all of their supply to a single shipper, wholesaler, wholesale-shipper or cooperative, and there are instances where growers use multiple outlets to distribute their produce. Hence, subsector coordination is complex.

The industry contains examples where coordination is so planned as to be regimented. Many importers, for instance, contact their foreign growers via telex several times a day to keep them apprised of prices, demand and/or supply. This enables growers to plan production, schedule harvest crews and to determine whether or not there is need even to ship the merchandise. By the time the merchandise reaches stateside, the



majority has often already been sold and scheduled for shipment. Domestic shippers, in these instances, have a planned marketing scheme that requires close coordination with growers and with receiving wholesalers. Hypothesis H12 of Chapter II and its accompanying ancillary hypothesis suggest that technical efficiency increases in multi-stage segments of subsectors as vertical integration is approached. These planned procedures are the closest this industry gets to approaching vertical integration.

The other end of the spectrum of coordination is represented by some of the wholesalers who still sell on a commission basis. These middlemen often receive surplus merchandise from growers or shippers without forewarning. Instructions are only to sell at the best possible price. Growers or shippers often find out whether product was sold and at what price when the receipts arrive at the month's end. The minimal communication and the lack of planning ability that are associated with this method of sales are probably what have led to the decline in this type of business arrangement nationwide (see Goodrich et al. [1973] and Appendix A). The New York City market, probably largely due to its size, is the primary example of where commission sales still flourish.

Other coordination mechanisms abound. Many rely on telephone sales, e.g., calls by retailers to local wholesalers or calls to distant growers, grower-shippers or wholesalers via toll free numbers (requesting drop shipments), etc. Havis [1967] reported that florists (surveyed in 1964-1965) purchased 59 percent of the flowers they bought by telephone, 31 percent on personal inspection, 8 percent on standing orders and 2 percent through other arrangements. (For flowering and foliage plants, 49 percent of those purchased were secured via

telephone, 41 percent on personal inspection, 6 percent on standing orders and 4 percent through other means.) Many cases of coordination, however, rely on "blind" or "almost blind" sales techniques involving speculating merchants, who carry some average inventory in the hope of making average sales on the average day. Local wholesalers, routemen and jobbers and, in some cases, even large shippers are often at the mercy of this non-specific coordination technique. As long as things remain about average, everything is fine. However, when operations do not reflect the ordinary, lost sales or deteriorating merchandise results. Handling of a perishable product under such conditions can have grave consequences for the industry. Unfortunately, this is probably the norm.

Uncontrolled factors affecting coordination. Some factors that affect the coordination task are not always under the control of those involved. As with much of agriculture, the weather sometimes presents problems. There are many producers, especially in California and Florida, who operate completely unprotected from the elements. Others operate with some shelter but may not have the ability to heat to protect against cold temperatures. Crop delays or damage may result.

The weather can also affect shipment. As the vast majority of the industry's produce travels fair distances to market (via truck, bus, train or air), delays caused by foul weather can easily alter normal product movement through the market channel. Such delays not only influence the timeliness of deliveries, but they can materially affect the quality of the merchandise in the system. The East Coast's heavy dependence on truck deliveries [Sullivan et al., 1980, pp. 43-44] can

cause frequent market swings in supply (and subsequently, prices) when winter weather plays havoc with interstate travel.

Production of many cut flower species relies on a photoperiodic response. (See Chapter III's discussion of various species, e.g., chrysanthemum production.) Hence, sudden changes in the weather are not drastically apt to affect the general timing of crops (short of several repeated eclipses of the sun). However, several cloudy and cool days or several bright and warm days in succession (or breakdowns in greenhouse heating, etc.) near the end of a production cycle may moderate the flower's final blooming. Such happenings can have drastic effects for a grower whose crop is timed specifically for a holiday. Reports of growers "missing" a holiday are not uncommon.

Decisions made by those not specifically in the product handling channel also may affect supply and/or demand. Wire services frequently influence production and marketing decisions with their holiday specials. Some wire services publicize their bouquet needs well in advance so that channel participants may anticipate needs. Yet, many growers resent succumbing to such suggested production patterns, when it means the altering of already established plans. Sales, especially by large mass merchandising chains, can also affect the normal operating procedures for others in a local marketing channel; sudden surges in demand for particular varieties can be created by poorly coordinated sales pushes originating, for instance, at a corporate headquarters.

Firm decisions affecting coordination. Whether true market channel participants or not, decisions made by firms which affect the subsector often cause irregularities in coordination, making the job

more complex. Arranging flowers for a wire service's seasonal bouquets, for instance, can require odd amounts of different species, such that normal lot sizes do not reflect the needs of the florist. This may complicate the inventory procedures for wholesalers and retailers. When a major wire service advertises a certain arrangement, the collective needs of member firms for the specific species required in that arrangement often create demands which exceed normal market supplies. This excess demand, even if the flowers can be found, can mount to the point that the bouquet's advertised price can no longer accommodate both the required flowers and the firm's normal overhead and profit. (Recently, the industry has seen efforts to assist retailers battling these problems. One wholesaler advertised the sale of pre-packed bunches containing the specific flower needs for an FTD holiday arrangement [Kennicott Bros. Co., 1982].) However, the firm that simply omits some of the arrangement's requirements not only violates wire service standards but does the industry a disservice by potentially antagonizing the consumer.

Other industry participants have experienced coordination problems of a different sort. Many mass marketers have faced a bias on the part of some wholesalers who refuse to sell to non-traditional florists. Sometimes these wholesalers claim they have been threatened with a boycott by retailers if caught selling to mass marketers [Sullivan *et al.*, 1980, p. 58]. Occasionally, this same type of bias is seen at the grower-wholesaler junction of the market channel. As a result, market channel participants faced with limited supply sources have at times resorted to more formal arrangements. This tends to confirm the first hypothesis of Chapter II. Hypothesis H1 posed the argument that,

as the number of buyers or sellers declines in two vertically tangent stages of a market, coordinating practices move toward increasingly specific agreements.

In some market areas, the same threats of betrayal of loyalty have created tumults regarding the legitimacy of certain wholesale customers. Some wholesalers now require identification with retail license numbers before sales can be completed. Others openly disregard any such requirements.

Conflicting goals: Conflicting issues and conflicting members.

Probably two of the biggest problems of coordination in the industry come from decisions by the subsector members to not adopt (a) uniform grades and standards for all species and (b) uniform guidelines regarding statements of expected life or guarantees of freshness of the items marketed. These two issues, which will surface repeatedly throughout the remainder of this chapter, have acted as "stumbling blocks" in the domestic marketing system. The inconsistencies among different market participants' methodologies in dealing with product grading and handling (Appendix A) prohibit uniform coordination among the channel members. Product cannot be ordered sight unseen, without either some historical precedent having been judged sufficient or the taking of a risk (as to whether or not the product being ordered will meet some given expectations). The fact that product moves through the market channel along many different routes only magnifies the disparities among participants and underlines the extent to which the coordination effort is harmed by these non-uniformities.

Profit maximization is usually considered a primary goal of businesses striving to remain in operation. The handling of a perishable product in a market channel where no penalties are charged for delay has potential for conflict with the goal of profit maximization. A marketer putting the goal of profit maximization ahead of the goal of efficient product handling could have a motive for delaying or accelerating normal product movement. This could easily be accomplished in the light of predictable seasonal price fluctuations. While acceleration can always be applauded, delay can only serve a short term profit motive which detracts from product freshness and quality.

For example, during periods of low market prices, there is incentive neither to speed nor delay movement of product in the channel. Similarly, no motive exists to interfere with normal product flow during periods of consistently high market prices. However, when market price levels are rising (or expected to rise) or dropping (or expected to drop), a (short-term) profit maximization rationale may exist for altering normal product flow. During rising price periods, the temptation is to impede product movement, in the hope that prices will rise before the sale to the next channel participant. The absence of date codes or product-freshness guarantees permits such aberrations to occur unchecked, as long as product remains within a marketable range. Indeed, such short-term profit motives and absence of penalties are what spur the practices of timing of crops and rotation of harvested product near holiday periods (Appendix A). When prices are trending downward, a (short-term) profit motive may suggest speeding product flow through the system to avoid sales at the still lower expected prices. It is only when market channel participants are confronted with the hope of

continued sales on a long-term basis that prudence would dictate never impeding, and indeed, making every effort toward accelerating, the movement of perishable products through the market channel. The long-term considerations would indeed benefit all market channel participants. Hypothesis H18 of Chapter II seems to summarize this discussion well. It states that the benefits from increased coordination increase with the perishability of products, the importance of careful scheduling between stages and the importance of quality specification.

Marketing theory suggests that the existence of uniform product grades and standards in an industry can lead to marketing efficiencies. Grades and standards are thought to provide those producing a quality product with a reward for their efforts. Furthermore, grades and standards provide more information about trade commodities to all parties of trade, especially buyers and sellers, where product information is more nearly equalized [Nichols et al., 1983]. Such product information is especially crucial when transactions occur over great distances. The absence of grades and standards or the existence of individual grades and standards particular to each firm or region hence adds to market inefficiency and consumer dissatisfaction.

Yet, uniform grades and standards have not been adopted by the cut flower industry, even though the subject has been researched and specific grades were suggested for some flowers by the Society of American Florists (SAF) [Anonymous, 1968]. Marketing theory offers some suggestions for this non-adoption. Vertically integrated firms can internalize both their pricing mechanisms and their product standards, hence negating their need for the adoption of uniform grades



and standards. Similarly, use of brand names or growers' names on merchandise can reduce the reliance on uniform grades and standards, as long as some quality characteristics can reliably be associated (from previous experiences) with that brand or grower's name [Nichols et al., 1983].

One might hypothesize that the industry has never adopted uniform grades and standards because of a question of timing. Grades and standards might be important in times of peak market activity. These periods, however, coincide in the U.S. cut flower industry with periods in which product is scarce relative to the demand. At such times, almost all product clears the marketing system, no matter the level of quality.

It is often thought that, for grades and standards to be adopted successfully, they must be meaningful to consumers. Consumers must be allowed the opportunity to convey their preferences to producers through trade channels. Grading is even considered to act as a protection to buyers, when it is thought they generally lack the requisite skills for determining product value [Rhodes and Kiehl, 1956]. However, DeLoach noted ". . . that the average man or woman is far less concerned with the finer points of a perfect flower than are florists and plant breeders . . ." [1959, p. 32].

Finally, there is the question of cost. In order to be adopted, the added cost of the product due to the grading efforts must be warranted. A 1954 study conducted in Spokane, Washington, questioned the advisability of grading. Although a price differential was noted for graded versus ungraded carnations, the price advantage, once the cost of grading was considered, was only 2.25 cents per bunch of



25 carnations. For pompon chrysanthemums and snapdragons, however, more noticeable differences between graded and ungraded stock resulted. The authors of the study, nevertheless, concluded that grading was most profitable for growers of higher-than-average quality flowers [Ballantyne et al, 1958].

Other areas of conflict also exist. For instance, the question of profit maximization may influence other business practices. As with all market channels, each participant has an incentive to buy low and sell high. When a market is healthy, this becomes relatively easy for all parties concerned. However, when the market is in a slump, some profit potential is usually sacrificed.

Inventory control also can interfere with profit maximization decisions. Firms which inventory too much product face increased inventory costs and increased possibilities of product shrink. On the other hand, firms which inventory too little can alienate customers from repeated shortages.

Imports first became an issue of conflict when domestic growers experienced the added competition in the marketplace. Some domestic growers threatened wholesalers against carrying imports. In the early 1970s, florist trade shows often housed booths of growers and shippers of Colombian carnations who gave away samples of their product in an attempt to prove their comparability with domestically produced stock; frequently, the Colombian promoters had trouble attracting recipients of the free merchandise. Gradually, imported stock became acceptable in the trade, although many grower groups still emphasize the trouble that imported product has caused and continues to cause their members.

Several petitions have been brought before the U.S. International Trade Commission requesting import relief.

Another area of conflict revolves around the issue of mass marketing of cut flowers. For years the only reputation that this concept harbored in the minds of industry participants was one of a threatening danger [Walker, 1976]. Florists thought mass marketing would lead to their downfall, much to the detriment of the flower-buying public. While such notoriety has not completely vanished, many florists have reported increased sales due to the presence of mass marketers who carry flowers [Goodrich and Avermaete, 1975]. Other studies have suggested that mass marketers and traditional florists reach different clientele and serve different functions [Jensen and Kirschling, 1975; Kress, 1976a; Miller, 1977]. Nevertheless, wholesalers become embroiled in the controversy, as some traditional florists threatened their suppliers with boycotts if they were to sell to mass marketers [Sullivan *et al.*, 1980, p. 58]. Many of these threats have been silenced, although some middlemen have found it necessary to operate separate facilities to serve their traditional florists and their mass market patrons (Appendix A).

The goal of selling more flowers is also occasionally beset by operators promoting different means of doing the same. Traditional florists in some locales have tried to get legislators to license florists. While florists have claimed their goals were to protect the public from shoddy merchandise peddled on street corners and by mass merchandisers, detractors have insisted that the laws were meant to stifle competition [Kent, 1981; Morse, 1981]. A question of real competition has also arisen as some florists have refused to sell

designing hardware to customers preferring to do their own designing with garden produce or with flowers procured from other sources. Florists have sometimes discouraged educational or civic groups from becoming involved with flower or plant sales as well.

The various subsector members are often in conflict by the nature of their marketing goals, purposes or roles in the industry. Traditional retail florists typically cater to high-service needs and are known for their quality products and selection. Mass marketers, on the other hand, typically promote self-service outlets, with minimal frills. These two market participants can come into even greater conflict than normal competitors if the mass marketer suddenly begins to offer such services as credit, delivery, wire orders and others (e.g., wedding and funeral work), more typically associated with full-service outlets. Some mass marketers have become targets of verbal abuse from traditional operators for opportunistically using holiday periods, times during which florists expect their major business peaks, to mark their sole entry (with seasonal plants and flowers) during the year into floriculture.

Many traditional retailers are accused of being less than aggressive marketers. Retailer apathy, it has been suggested, jeopardizes the entire cut flower industry [Walker, 1976]. As a result, traditional retailers are often faulted for the cut flower industry's troubles and stagnation by members at other levels of the marketing channel (Appendix A).

One of the most publicized areas of conflicts in the industry has been that involving the various wire service organizations. While not all of the wire services are member owned, FTD, by far the largest, is a

member cooperative. Yet, perhaps because it is the largest wire service, this organization has often been embroiled in issues involving restraint of trade. Several consent decrees have been negotiated between the U.S. Justice Department and FTD regarding FTD's business practices as they may relate to other wire services.

The many middlemen in the industry also frequently come into conflict with one another as they ferret out customers. The different methodologies, whether commission sales, contract sales or direct purchase, also can create animosities among other middlemen and among growers, as various persons claim they each gave or received the best or worst deal (e.g., Appendix A highlights the references made in the industry to the New York City wholesale market as being "The Den of Forty Thieves"). Wholesalers are sometimes scorned by fellow middlemen for sales of merchandise to unlicensed retailers, for sales of less than fresh merchandise and for sales outside of the traditional marketing channel. Many question the service wholesalers claim they provide, insisting instead that wholesalers are only bankers offering credit (Appendix A).

There are many cooperatives and cooperative-like organizations operating in the industry at almost every level of the marketing channel. They, too, receive their share of criticism from those excluded from the organization, bypassed by it or in any other way affected by its operations. There are grower cooperatives that do everything from buy supplies of inputs to market their product collectively; these naturally conflict with salesmen and shippers who would rather contact the growers individually. Hypothesis H28 (Chapter II) suggests many characteristics of firms found in the cut flower

industry which lead to such producer collective actions. Hypothesis H27 contends that firms at different stages with conflicting goals often operate independently and in a state where conflict is more prevalent than cooperation.

Some groups of retailers have formed cooperatives for establishing their own wholesale house for quantity purchases. FTD [1982c] reports that 549 of its retailers owned wholesale florist businesses in 1980. Other retail groups have established delivery pools for the more efficient delivery of member arrangements in large cities. Sometimes such business arrangements have led beyond the delivery aspect of the business to the designing and servicing of orders, as retailers in different neighborhoods take the responsibility of completing the orders of the cooperative's members across town. Florists' Transworld Delivery Association (FTD) got its start as a way to handle such orders from city to city.

Today, FTD, the largest cooperative operating in the industry, is expanding its clearinghouse role (of wire services) to one of product acquisition and marketing agents. Selected feature arrangements now are marketed in specific cooperatively-marketed containers (as well as with specific flowers); this has caused some anguish among hard goods suppliers. The various arrangements, which often specify certain varieties and colors of certain species, also cause conflict. It is claimed by some that a perhaps higher-than-normal demand for some cultivars in limited supply is created by the notoriety that such a feature designation brings.

Growers, too, get their share of criticism from industry operatives for many reasons. Growers are often accused of bypassing middlemen

when they vertically integrate into wholesaling and shipping [Walker, 1976]. Others criticize the lack of grades and standards, maintaining that the grower should adopt some procedures to provide graded merchandise. Many growers (and wholesalers and retailers, too) get accused of "dumping" inferior merchandise on the market at bargain prices when normal channels would refuse the same (Appendix A).

Seedsmen, dealers, propagators and others in the industry also occasionally clash with fellow industry operators. Questions of proprietary rights versus the costs of buying cuttings often arise as dealers debate selling to operators who only buy patented material infrequently, claiming these are the operators who are (illegally) maintaining their own propagating facilities. Growers respond that rising costs of inputs and declining returns justify their actions. Other criticism is aimed at breeders who release unmarketable varieties which may grow nicely but ship poorly. One criticism, heard by this author, was directed toward a large breeding and cutting supply firm; the claim was that this firm had scoffed at a known (and named) independent breeder who had developed disease resistant varieties. The hypothesized fear of the large firm, according to the grower speaking, was that the disease resistant varieties might ultimately lead to reduced sales of cuttings by the large supply firm.

Finally, one should mention the efforts of the various organizations in the industry which, by their charters, often have conflicting goals. While organizations such as Roses, Inc., which is composed of rose growers, can pursue their goals relatively uninhibited, other groups such as the Society of American Florists and Ornamental Horticulturists (SAF) were organized to represent all industry groups--

growers, middlemen and retailers. Hence, SAF can promote flower buying with a clear conscience (as SAF's American Florists Marketing Council (AFMC) does), but issues affecting only one group of marketing channel participants often lead to conflict. For instance, domestic growers have petitioned the U.S. International Trade Commission (USITC) for import relief, while middlemen and retailers have maintained that they needed the additional supply. The organizations operating in such a sphere of multiple objectives certainly have a difficult job. The pronouncements of such an organization can lead to industry strife even if separate working committees exist to try and alleviate the conflicts of interest.

#### Relative Importance of Coordination

Coordination among the various firms in the market channel is very important, for it is a good coordination effort that lies at the heart of the entire marketing scheme for an industry. Marketing, defined for a commodity as the process of altering the time, place and form of a raw material into the final consumer good, concerns itself with the movement of product through the distribution system. The thoroughness of the coordination effort determines the ease with which that product flow is maintained, the quality of the merchandise (i.e., appropriateness of time, place and form) at the end of the distribution process relative to consumer desires and the satisfaction that the consumer and various market channel participants have with the product and the marketing system. The fact that cut flowers are a perishable commodity emphasizes the need for a well coordinated marketing effort.



As far as timing, this industry has gotten flower production down to a science. Growers can, and often do, time their crops for specific holidays. Results of research into photoperiodic effects on certain plants continues to broaden this knowledge. Many growers insist that accurate timing of crops for holidays is the only way to achieve the necessary returns in the marketplace; therefore, the long-term survival of the industry may be at stake. Other growers point out that too much of the timing philosophy (favoring the altered production) is dependent on the chance hitting of a peaked market perfectly; they insist it is better to keep production levels fairly constant (Appendix A). The price movement analyses of Chapter V verified that holiday price peaks do occur, hence reinforcing the need for some coordination efforts in order to have enough product in the marketplace when needed.

As long as some product shrink occurs during distribution, there is room for improvement in the timing aspect of the market coordination effort. While most product, once sold by the grower, makes it through the system to the retailer (except during the most depressed markets), there are still instances where merchandise is discarded at each stage of the market channel. This industry has long been criticized for using the funeral business as a place for discarding flowers at retail rather than the dumpster (Appendix A). Room for improvement obviously exists.

Coordination efforts relating to place probably are undergoing the biggest changes in the industry. The dominant transportation mode seems to fluctuate periodically between air and truck movements, as various firms change rates, services and their emphasis on carrying perishable commodities. In parts of the U.S., use of busses and/or trains also takes a prominent role in cut flower movement. Perishability of



product also necessitates a smooth transportation coordination effort. Unlike the situation for most manufactured goods and many agricultural products, a slowdown in movement through the cut flower marketing system can be devastating.

Movement of product from place to place becomes even more crucial at peak demand times. The trucking industry seems ready to accomodate added loads, although it is sometimes difficult to justify scheduling additional transport vehicles when they are needed for only a few peak periods in the year. Problems have been reported, however, with air transportation at Christmas time, as flower loads are often "bumped" in favor of holiday mail and the added baggage of holiday travelers. This is obviously dependent on the commitment of the particular airline.

Coordination of place goes beyond transportation efforts to the question of place of purchase; here too the industry is undergoing a transition. The place at which a person can buy flowers has changed from only the retail flower shop at the town's edge or the central business district to include florists in shopping centers, discount and department stores, grocery stores, street corner vendors and others. Making it more convenient for the consumer to find and buy flowers has to be a major goal if industry sales are to expand.

Product form obviously is a primary determinant of product sales. If the product is not pleasing to the consumer, sales, or at least repeat sales, are not likely to occur readily. The pre-packaged bouquet can almost be considered a relatively new product innovation, due to its wide acceptance in mass markets. Retail florists' designers have recently started using an open style design which utilizes fewer flowers

[Trick, 1980]. The ferreting out of consumer desires for changes in product form is important for continued sales.

Satisfying the consumer's desires for product form, especially when dealing with a perishable product such as a cut flower, goes beyond the arrangement of flowers in a bouquet. The entire issue of product freshness and product grades and standards again surfaces. Assuring consumers that their patronage will be rewarded with a good product value is important, not only for initiating sales but for instilling the sense of pleasure and satisfaction needed to encourage continued support. Satisfying the other market channel participants with a quality product is perhaps the key to this distribution challenge. The consumer at the end of the market channel could never be happy if the previous channel participants are not also pleased with the freshness and the quality of product they received, which they are then forced to sell.

#### Coordinating Mechanisms

The coordinating mechanisms in the industry sometimes vary with particular participants, but sometimes they are equally characteristic of all. Some exchange arrangements, for instance, may be particular to two individual firms, while others may be more consistent with the majority. In many cases, information systems are available to any industry participant or observer; others require huge sums and/or particular memberships. Finally, there are several organizations and trade associations which provide certain benefits or privileges to those who are affiliated; some of these privileges may include a number of coordinating mechanisms.

Exchange arrangements. The most frequently used coordinating mechanism in the cut flower industry is the exchange arrangement whereby suppliers exchange goods for payment. Retailers generally see and/or speak to their wholesalers at least once or twice a week. In some cases, suppliers may contact clients several times a day. The range depends on various characteristics of those involved, market conditions, locality and the services provided. Some retailers practically live out of wholesalers' coolers. Others visit with wholesalers once a week. Some growers harvest twice a day; they too, are required to contact marketers often.

Frequent coordination between wholesalers and retailers is characteristic for handlers of perishable products according to hypothesis H34 of Chapter II. Coordination of unbranded, perishable products tends to be based on frequent contact. Furthermore, coordination is said to evolve into standard working arrangements but seldom into formal contracts.

In other cases, the coordination is planned on a more long range basis. Some growers now request orders, especially for holiday plants, several months to a year ahead of time. Several mass marketers, who had had difficulty recruiting supplies, were among the first to offer early orders to growers. Growers have, in many cases, grown accustomed to such procedures and now demand it from all of their clients. Large wholesalers and shippers occasionally have arrangements with smaller wholesalers and retailers for delivery of prearranged lots on a regular basis.

While the job of retailing is mostly (but not completely) confined to retailers, the job of wholesaling is not restricted to wholesalers.

Many growers sell directly to retailers. Large growers and shippers typically define their customers by establishing certain minimums, however. Throughout the marketing channel, participants are often limited in their exchange arrangements only by frequency and size of orders, given satisfactory credit records. Some market channel participants will not sell to subsequent channel members if such action allows others to bypass regular clients.

Havis [1967] reported that florists bought 52 percent of their cut flowers (and 40 percent of their flowering and foliage plants) by telephone in 1964-1965. Furthermore, 27 percent of cut flowers (and 32 percent of flowering and foliage plants) were bought on personal inspection. Only 3 percent of all florists bought cooperatively; florists so involved purchased only one-tenth of their cut flowers (and one-fifth of their flowering and foliage plants) through their cooperative arrangements.

One certainly cannot diminish the role of the telephone as a coordinating mechanism. The phone, as previously reported, is a key device for retail florists as 55 percent of florists noted that they made between 70 percent and 100 percent of sales via this instrument [FTD, 1982c]. Retailers also make many of their purchases via telephone. This device is employed through the entire market channel as a major tool of communication.

Information systems. There are many different information systems available in the industry. The U.S. Bureau of the Census reports information about industry participants in its censuses of retail trade, wholesale trade and agriculture. The USDA's Crop

Reporting Board had published annual industry production data since the mid-1950s; the Reagan Administration, however, terminated this report with its 1982 publication. The USDA Agricultural Marketing Service's Market News Branch, in conjunction with state departments of agriculture, reports wholesale market prices for many cities. The market news reports had been available without charge through July 1982 to all interested parties; beginning in late 1982, subscriptions were being sold for these releases. Many agricultural libraries provide these and the previously mentioned data.

There are many organizations which provide industry members with information as well. The Society of American Florists and Ornamental Horticulturists (SAF) has grower, wholesaler and retailer divisions, and its American Florists Marketing Council (AMFC) provides marketing information, including promotional materials, to member firms. The Society of American Florists and the American Florists Marketing Council are currently urging the industry to sponsor a Floraboard to further add to the floriculture industry's promotional and research base. The enabling legislation was enacted as part of the 1982 Farm Bill. Hearings, to gain industry input, have already been conducted, and an industry referendum on the matter is scheduled for late Summer 1983. (Floraboard will be discussed further in Chapter VII.)

Other trade organizations occasionally report on results of member surveys. Roses, Inc., which represents rose growers, and the Wholesale Florists and Florist Suppliers of America (WF&FSA) are two such examples.

The mass marketers also have three industry organizations which aid members with marketing information. The United Fresh Fruit and

Vegetable Association and the (perhaps) more prominent Produce Marketing Association both have floral marketing divisions which sponsor industry conferences, seminars and promotional materials. The Food Marketing Institute also watches the changing floriculture picture in supermarkets.

All of the wire services have organizational personnel which provide assistance to member firms in almost every aspect of business from marketing to financial planning. The largest wire service organizations also have monthly magazines and field service personnel to help with information release. Furthermore, wire services now try to inform the trade about upcoming holiday specials and the flower species that will be needed for same.

Information services also include several trade magazines. Florists' Review has for years printed abbreviated market price information for certain species, sizes of flowers and cities. In addition, Florists' Review has a column summarizing market events in various cities, news of various allied flower associations and the like. Other periodicals, such as Flower News and Southern Florist and Nurseryman also report happenings in the industry.

The industry also utilizes the services of a number of consultants. Growers typically place heavy reliance on local Cooperat Extension Service personnel and specialists from various Land Grant colleges of agriculture. In some cases, marketing personnel in departments of horticulture, agriculture economics and/or business regularly work in the ornamental horticulture area. A few professional consultants are available for hire for specific matters; some provide newsletters (one costing hundreds of dollars annually) for interested parties.

Consultants are available for problems of growers, wholesalers, retailers (including questions about design) and other marketing issues.

Finally, the newspaper in any city or town acts as a source of market coordination information. Many retail shops have an individual responsible for cutting out the obituary column(s). Funerals, as Table 5-1 reported, play a big (although declining) role in flower shop operations. Wholesalers can be forewarned that large orders may materialize, especially if several prominent citizens and few "Please Omit"'s are listed on the obituary page. Some florists also use the society page's listings of engagements to target couples making wedding plans.

Collective organizations. Several local, regional and national organizations play roles in market channel coordination. Locally one finds many communities where retailers have organized allied florists' groups and/or where producers have formed growers' associations. Some of the allied groups have actively organized delivery systems or cooperative ventures for distribution of members' flower arrangements. Growers' groups have sometimes formed cooperative enterprises for buying supplies or marketing produce. Both florists' and growers' associations often serve as conduits through which information is shared with fellow members. These groups also take on public relations functions, sometimes working in industry promotional activities, responding to press or personal inquiries and/or handling intra-industry relations. State or regional organizations often serve some of the same functions on a broader basis; in addition, these groups often sponsor trade shows, design schools and conferences. Such events allow members to meet each

other, as well as suppliers, growers and university extension personnel serving the industry. Public flower shows are also frequently at least partially the result of such groups' efforts.

The Society of American Florists and Ornamental Horticulturists (SAF), which has grower, wholesale and retail divisions, acts mostly as a trade association; it does, however, perform some coordinating functions. Its American Florists Marketing Council (AMFC) has traditionally been the chief source of advertisements which strictly promote "flowers" for the industry. The AMFC has also been responsible for the development of the "Friday Flowers" program which encourages people to buy flowers regularly to celebrate the weekend. Other flower-buying occasions such as National Secretaries' Week have resulted from AFMC work. The American Florists Marketing Council and the Society of American Florists also act as industry spokespersons in public relations capacities and as industry lobbyists. The SAF has yearly conventions as well, and has also been the chief promoter of the industry's Chain of Life Program, which stresses proper care and handling techniques throughout the market channel.

Other groups in the industry, although usually operating on a more limited scale than SAF, perform similar trade functions. Roses, Inc., is a national rose growers' organization and probably the most prominent of these other groups. Roses, Inc., has a regular newsletter and has even represented growers before the U.S. International Trade Commission. The carnation growers had a similar trade group in the American Carnation Society, but this group disbanded in March 1981. Wholesalers may be affiliated with the Wholesale Florists and Florist Suppliers of America (WF&FSA). There is also an accrediting organization for



selected retail florist designers, the American Institute of Floral Design (AIFD).

Other market channel organizations exist which act chiefly as coordinating mechanisms. Several organizations, such as the California Flower Market, the Peninsula Flower Growers and the San Francisco Flower Growers Association, are directly involved in marketing functions; these three organizations concurrently operate the San Francisco Flower Terminal (wholesale market). Similar organizations and cooperatives operate the flower markets in Los Angeles, Portland and Boston and the auctions in San Diego, California, and on Long Island, New York. Other organizations exist as well, which cooperatively market their produce, although sometimes on a smaller scale. There are numerous instances of producer cooperatives or cooperative-like corporations which operate to market the produce of member growers. While Denver Wholesale Florists is an example of a large organization (currently with about 50 growers), many small groups of growers (e.g., three to 10) also operate marketing arms. Some of these organizations also act collectively to purchase supplies for their grower members. Retailers have also formed various cooperatives for wholesaling of flowers and supplies and, in some cases, for delivery of finished arrangements.

The largest cooperative operating in the industry is the Florists' Transworld Delivery Association (FTD). FTD was originally formed to act as a clearinghouse for orders wired to florists in other cities. As such, FTD not only arranges for transfer of payment from the florist placing the order (sending florist) to the florist filling the order (receiving florist), but FTD guarantees the receiving florist his payment. While the telephone has previously played a major role in the

actual transfer of these orders (one florist dialing another with the details of the order), this role may be fading somewhat. In 1980, 41 percent of FTD members reported having a Mercury console in their shops [FTD, 1982c]. Each acts as one link in FTD's own computer terminal and order transferring system (although members must still arrange the connecting telephone lines with local utilities). Eventually, such shop-to-shop coupling may provide the best coordinating mechanism in the industry. This system has already been expanded to provide members with bookkeeping and other services. Yet, wire order transfer is still FTD's main function.

Although the wire order clearinghouse is still FTD's main job, FTD also is the cut flower industry's largest advertiser. FTD has (as have other wire service organizations) nationally promoted specific seasonal or holiday arrangements, hence influencing flower buyers' tastes and preferences nationwide. Recently, FTD has also established a special service committee which offers member retailers hard goods supplies for advertising specials and other arrangements.

### Coordinating Elements

Prices naturally act as the chief coordinating element, as money exchanges for product. However, information sources and predictions of future market conditions play a role in helping to coordinate the industry. Knowledge of the attitudes of industry decision makers also can suggest trends and, hence, act to help in coordinating market participants.

Hypothesis H15 of Chapter II suggests that coordination of supply and demand is a function of pricing accuracy, information flow,

cooperation between subsector members and influence over demand. The coordination elements serve as a means for supply and demand to interact in an efficient manner. Market performance is hopefully improved as a result.

Prices. Prices in a market setting should reflect supply and demand conditions. However, when all product does not pass through the same marketplace or market channel, the prices charged do not always reflect the general market conditions. The diversity in a widely spread marketplace further allows individual merchants to display different *modi operandi* in their marketing strategies.

The wholesale and grower segments of the cut flower industry typically reflect supply and demand conditions. Chapter V showed that price fluctuations at the wholesale markets for the major cut flower species do occur. Shipping price fluctuations were also evident.

However, retail prices do not always follow suit. Cathy Zeller [1981] surveyed retail and wholesale market prices around the 1981 Valentine's Day holiday. She found that retail prices did not always fluctuate up or down to the degree evident at the wholesale markets.

Summer gluts at the grower and wholesale levels of the industry are also frequently disregarded at retail. Many retailers attempt to maintain some pricing stability year round. Hence, summer supply gluts are not usually reflected in retail prices. Traditionally, summer reflects the lowpoint of the year's retail sales cycle [Sullivan et al., 1980, p. 65]. A combination of bloom-filled gardens and a void of flower-giving holidays are often blamed for the lull. Yet, many retailers

follow tradition and let summer months pass unpromoted [Nicholas, 1982b; Anonymous, 1981a].

Sullivan *et al.* [1980, pp. 67-69] suggested that florists should take advantage of the inelastic demand associated with the majority of traditional floral sales. They noted that management can indeed price these sales at a higher than normal mark-up without fear of losing sales. Only the non-traditional floral sales need be priced at a more competitive level. As traditional sales represent about 90 percent of the average florist's gross sales, florists often ignore the fact that some sales may be price responsive.

Another possible explanation for at least part of the less than true reflection of supply and demand that prices portray may be the perishable nature of the product. Flowers lose their value fairly rapidly. In fact, flowers could theoretically attain a negative value reflecting an added cost of disposal as they wilt and die. Hence, one might expect flower prices to drop periodically to zero if they were accurately reflecting supply and demand. However, the continual replenishment of the market channel with fresh product may keep prices elevated, as prices must equally reflect the supply and demand interaction of valuable merchandise. In a sense, flower prices may not have enough time to fall to the zero level before they must again reflect the market's valuation of fresh produce.

Some market participants may (occasionally) display a resistance to alter their pricing structure for quantity purchases. In a perfectly competitive environment, one would expect a reduction in price to accompany an increase in quantities being sold. However, perhaps because of known time constraints, limited competitive pressures at some

points in time, varying access to inventory-replenishing supplies, pride or other factors, some market participants refuse to acknowledge large purchases with prices reduced from the per-item price basis. This probably occurs more at retail than at the wholesale or grower levels, however.

Information. Another type of coordinating element in the industry is information. The USDA Agricultural Market Service's Market News Branch, in conjunction with the state departments of agriculture, releases price reports from the major wholesale flower markets in the United States. Wholesale market reports for San Francisco, Chicago, Boston, New York City, Dallas, Minneapolis/St. Paul, Milwaukee, St. Louis, Philadelphia, Pittsburgh and the Long Island Auction Market were being released one or more times per week as of 1982. In addition, the Market News Service (Federal-State) also publishes weekly shipping point reports for California and Florida growing areas and for imports (FOB Miami; volume only). Annual summaries of both wholesale market and shipping point price reports are also published in many cases.

Unfortunately, the lack of uniform industry grades and standards sometimes hinders comparison of reports from market to market. Although reports for carnation prices generally follow the suggested (but not uniformly adopted) SAF Grading System designations (Fancy, Standard, etc.) and rose prices are usually reported by stem lengths (26 inches and longer, 22-26 inches, etc.), product descriptions for other species can vary (e.g., the largest blossom for standard chrysanthemums may be reported as "large" in one market, "large-extra large" in a second

market, "very large" in a third and "medium-large" in a fourth market). Although some shipping point reports list actual counts, as in the import data, most volumes are listed simply as "steady," "heavy" or "light," etc.

In spite of this shortfall of information (created by non-adoption of uniform grades and standards), the available price information probably contributes to the overall market's competitiveness and performance. Several hypotheses of Chapter II suggest just this. Hypothesis H39 submits that prior to the dissemination of comparative price information, significantly different prices would be charged for products by competing sellers. Hypothesis H40 concurs, claiming that reduced price dispersion across stores and a lower average market price level would result from public price dissemination. Hypothesis H41 goes so far as to suggest that comparative price information would increase consumer satisfaction with both stores and products. Finally, hypothesis H42 maintains that the perceived and estimated value of comparative price information would exceed cost. If flowers were marketed in a standardized fashion, even further gains would probably result according to these hypotheses, for then the price information would be even more comparable.

As mentioned in the last section, several periodicals also report on market conditions. Florists' Review publishes an abbreviated market price page, listing wholesale market prices for the prevalent size for major cut flower species. This report, compiled by the Chicago office of the Market News Service, has a two to three week lag due to publishing time requirements (for Florists' Review). Other reports in

this and other periodicals communicate news notes from various markets or cities.

One industry consultant, Edd Buckley, publishes The Floral Index and The Floral Report. Buckley, who surveys thousands of households monthly on their purchases, reports findings on floral items purchased, types of locations where purchased and amounts spent, etc., as well as other industry trends and happenings. The Floral Index gives timely coverage of survey results; The Floral Report, which has a lower subscription rate, reports similar data in a somewhat less timely manner.

The USDA's Crop Reporting Board formerly has reported production data for major cut flower species on a yearly basis. These reports, however, were suspended with the 1982 summary of 1980 and 1981 production. The U.S. Bureau of the Census's Census of Agriculture, which generally occurs once every five years, also reports production data; however, the Census for Horticultural Specialties, which details data for the cut flower industry among others, only appears as part of every other Census of Agriculture. The Census Bureau also publishes a Census of Retail Trade and a Census of Wholesale Trade every five years. These report numbers and sales of retail florists and wholesale florists, respectively. However, results of these counts usually take several years to reach circulation.

The Produce Marketing Association has also commissioned studies on the trends in mass market flower handling. Results have appeared in its annual publication, the Produce Marketing Almanac. In addition, this and other publications, e.g., The Packer, Supermarketing and

Supermarket News, occasionally feature articles on trends in mass marketing of floricultural products.

The Wholesale Florists and Florist Suppliers of America (WF&FSA) recently published a survey of the operating ratios of member firms. The publicity preceding the report as well as the report itself suggest intentions are to make this an annual feature [WF&FSA, 1982; Anonymous, 1982f].

Another source of information for operators is other market channel numbers. Havis [1967] reported that wholesale florists were cited by retailers as the most important source of supply information in his 1964-1965 survey. Very large retail firms also relied heavily on information from growers and routemen.

Predictions of future market conditions. The USDA Crop Reporting Board's annual publication of Floriculture Crops, suspended as of 1982, had traditionally provided the only short-term production forecasts for the entire industry. These resulted from a survey of growers, which requested intentions for the coming year as a percent of the current year's production. These, however, did not reflect total market supply, as much of the U.S. cut flower supply is composed of imports.

Other forecasts of future supply, demand or prices, both short- and long-run, are irregular at best and consist of comments gleaned from various articles, papers or talks by industry participants, consultants and watchers (e.g., university personnel). They generally are not quantitative. Market channel operators often receive supply information from their own suppliers, as noted above.



Attitudes of industry decision makers. Every industry is composed of those who innovate and those who adopt at some later stage the new technologies, processes and methods of operation, i.e., the leaders and the followers. The cut flower industry is no exception. In some cases, the innovating leaders represent the largest or the smallest firms, the newest or the oldest operations or are the youngest or the oldest entrepreneurs in an area or at a particular market level. Sometimes they are the richest operators. Usually they are deemed the smartest operators.

In a perfectly competitive industry, there is perfect information. Floriculture generally follows suit, and with news coverage as it is, the industry leaders are often spotlighted. This, too, becomes a coordinating element, and in the cut flower industry, it is perhaps one of the best. These industry leaders are often asked to respond to interviews, serve on planning committees for trade organizations and act as decision makers for associations related to their enterprises. For an industry that is being faced with constant challenges, the industry leaders' roles certainly cannot be minimized. Their goals, attitudes and decisions are often public record, and they are frequently mimicked in their actions in matters relating to business policies, prices, services, species grown, expansion or contraction and the like.

#### Summary

This chapter began with a discussion of the production and marketing channels of the U.S. cut flower industry. The roles of various market participants were outlined and the numbers of firms at each stage

were presented. A flow diagram depicting the alternative stages and channels of product flow was introduced.

The structure and characteristics of the buying and selling industries at each level in the subsector were then discussed. Identification of relevant markets, concentrations of buyers and sellers and entry and exit conditions were described for the retail, wholesale and grower levels. Technology characteristics of the industry were presented, as was a discussion of relevant cost function data. Financing and credit characteristics were listed. The types of firms involved at each stage of the industry were identified, and types of firm integration were described.

The chapter concluded with a discussion of coordination within the subsector. The complexity of the coordination task and conflicting issues and members were outlined. Finally, a description of the importance of coordination and a brief profile of the various coordinating elements and mechanisms found in the industry completed the chapter.

Next, Chapter VII will describe the past and present behavior and performance of the U.S. cut flower industry. Inventory and risk management practices, pricing, value added, transaction costs, profits at various stages, product loss and production underutilization in the industry and progressiveness will be discussed. The extent to which supply offerings match demand preferences in the industry will be considered, as will the equity and the competitive environment of the industry. Conflict in the industry will also be examined. Finally, Chapter VII will look at the forces causing changes in the organization and performance of the subsector.

## CHAPTER VII PAST AND PRESENT BEHAVIOR AND PERFORMANCE IN THE SUBSECTOR

A working concept of the commodity subsector approach and hypotheses derived from this type of work were described in Chapter II. Chapter III continued with a description of the general commodity characteristics of cut flowers, while Chapter IV reported on supply trends, shifts in production and the effects of imports and world markets. Chapter V centered on the consumption of derived products, price elasticities and flexibilities of demand and commodity price patterns. Chapter VI followed with a detailed description of the subsector organization and a thorough discussion of the industry's coordination efforts. This chapter will now describe the behavior and performance of the U.S. cut flower industry, relying on many of those elements reviewed in the previous chapters.

### Inventory and Risk Management Practices

Retail and wholesale operations are more closely aligned in their inventory and risk management practices than are the operations of growers. Both retailers and wholesalers (the latter term being used here to represent most middlemen) have a materials handling function. Growers, who are chiefly involved as materials producers, often have inventory consisting only of some inputs.

An excellent key to describing inventory and risk management practices is the consideration of costs. The operating costs of

retailers and wholesalers are similar in scope and will be examined first. Subsequently, the business operations of growers will be reviewed. A discussion of risk management practices in the industry will conclude this section.

#### Costs in Retail and Wholesale Businesses

The capital requirements of retailers and wholesalers can often be quite similar. Both retailers and wholesalers must build, buy, rent or lease structures, transportation, refrigeration and other fixtures. The capital requirements are obviously affected by the size of the operation. Yet, such requirements can be considered quite minimal when compared to the extensive requirements faced by the grower.

Still large investments are required, but these can be quite variable, often depending on the founding of the operation. Havis [1967] reported that 49 percent of the retail florists surveyed in 1964-65 initiated their own businesses. This compared with 10 percent who purchased their shops from relatives, 33 percent who purchased their shops from other than relatives and 8 percent who inherited their shops. A 1975 survey of members by FTD found results not very different from those of Havis. The 1975 results indicated that 39 percent of single-unit members started their own shops. Other single-unit shop acquisition included 11 percent which were purchased from and 8 percent which were inherited from relatives, and 42 percent which were purchased from other than relatives. Multi-unit shop owners started 57 percent of their shops on their own, bought 7 percent of their shops from relatives and purchased 27 percent of their shops from non-relatives. Only 9 percent of multi-unit shops were inherited according to the survey

[FTD, 1977]. Obviously, method of shop acquisition can be a big determinant in the level of financing needed.

Once acquired, the business costs often vary with the type of operation and sales volume. Reporting on survey results from 1977-78 of nearly 800 retail members, FTD [1982c] found the rent paid by members to vary widely. Median rent figures, depending on sales volume, ran from 1.8 percent to 3.9 percent of sales. Total occupancy costs varied from 2.4 percent to 11.2 percent of sales, but the median occupancy rates ranged only from 3.25 percent to 6.06 percent of sales, depending on the sales volume.

Sullivan et al. [1980, p. 140] suggest that initial equipment costs should run about 7 percent of projected sales or about \$5.25 to \$5.50 (1980 dollars) per square foot of sales and display area. Small floral refrigerators alone may run \$1,000 to \$2,000, while 200 cubic foot walk-in models cost about \$3,500 new (in 1982). Naturally, the costs incurred by the typical mass market floral display which only uses buckets will be much less.

Wholesalers, too, incur costs for occupancy, fixtures and equipment. While these may be larger than for the retailer, due to volume of product handled, they are not necessarily a greater portion of sales. Indeed, they may be much less; as Chapter VI reported, about one-fourth of merchant wholesalers and almost half of the agents, brokers and commission merchants operate without any warehouse space whatsoever. Those wholesalers with space averaged about 9,750 square feet of warehouse space [U.S. Bureau of the Census, 1977 Census of Wholesale Trade, 1979].

Occupancy expenses obviously reflect the operations of the individual business. The 1977 Census of Wholesale Trade [U.S. Bureau of the Census, 1979] reported that merchant wholesalers incurred operating expenses equivalent to 25.8 percent of sales. Of this amount, just over half (50.4 percent) consisted of payroll costs. The remainder, about 13 percent of sales, represented other operating costs.

Delivery costs are normally reserved for the traditionalists among the retailers, but wholesalers too may incur such costs, depending on their operations. Delivery expenses for other than wages of retailers in the FTD 1977-78 survey [FTD, 1982c] ranged between 3.3 percent and 7.1 percent of sales. Larger volume operations tended to incur proportionately lower delivery costs, but many factors can influence this. Sullivan et al. [1980, p. 149] suggested that delivery expenses average 4.9 percent of sales for a shop with \$100,000 in sales. They claim the major delivery costs are those involved with paying back loans used to finance delivery vehicles.

Delivery is an important service for the floral trade, especially at retail. FTD [1982c] reports that an average of 74.5 percent of all orders is delivered, but this figure may understate the realities for many operations. Only 9 percent of FTD ownerships deliver less than 50 percent of all orders. The median response to the delivery question was for delivery of 81.3 percent of orders. More shops indicated delivery was involved in 90.9 percent of their orders than any other response (mode). Yet, the importance of delivery may be on the decline nationally, as the FTD single-shop owners surveyed reported a drop of about 2.6 percent in orders delivered between 1975 and 1980, while multi-shop owners noted a drop of nearly 8 percent.

Part of the drop in delivery may be an expected reaction to an increase in charges for this service. In 1975, only 59 percent of FTD ownerships charged extra for delivery, even for delivery in the same city or town. By 1980, extra delivery charges were incurred by customers at 83 percent of all FTD ownerships. Furthermore, delivery in many areas is dependent on a minimum order amount (80 percent of FTD owners surveyed) and often this does not preclude an added delivery charge (59 percent of the time). When there is a delivery charge, the majority of the time it may vary (56 percent of those charging extra for delivery) on factors such as mileage, price of the order, destination and type of occasion [FTD, 1982c].

Delivery costs in actuality go beyond those of gasoline and labor to one of financing a vehicle purchase. Often multiple financings are involved as the average FTD owner surveyed had 2.6 vehicles; only 23 percent of owners reported owning less than two vehicles. Owners reporting larger gross sales tended to have additional vehicles. While 93 percent of the owners surveyed owned at least one of their shop's vehicles, 16 percent also reported leasing vehicles. While standard vans are the most preferred vehicle type, many shops also use station wagons, passenger cars, trucks or other vehicles [FTD, 1982c]. Counting depreciation, taxes, licenses and equipment for the safe handling of arrangements, delivery investments probably run at least \$1,000 per vehicle per year and often go much higher.

In many cases, delivery expenses of wholesalers are negligible. Many wholesalers do not deliver flowers and many have their merchandise delivered to them (in which case there may be a freight and/or handling

charge incurred). However, there are instances when delivery is the major operating expense category other than for labor and the merchandise. Many wholesalers operate regular routes in which sales are made in a door-to-door fashion; this is frequently true of small jobbers and routemen, but some larger wholesalers may also operate such routes. The Wholesale Florists and Florist Suppliers of America's (WF&FSA) 1981 Operating Ratio Report [1982] noted that delivery expenses of the 204 wholesalers surveyed averaged 2.1 percent of sales for the fiscal year ending 1981, while packing and freight expenses for merchandise shipped out averaged 0.9 percent for all firms.

Retail florists and others may belong to various wire services. While such affiliations for wholesalers and growers are strictly on an associate basis, memberships are often considered quite necessary for retailers and can usually be considered a true asset of the retail business. Wire service affiliations can become sizeable expense categories for retailers, and wire service membership may greatly influence an operation's inventory requirements. Membership in FTD, for instance, runs approximately \$500 initially, about one-fifth of which is in annual subscriptions. When one considers that about one-fourth of all florists belong to two or more of the wire service organizations [Havis, 1967], it is easy to see how wire service membership expenses might mount. Furthermore, in view of the requirements that various wire services may impose or "suggest" regarding shop design and upkeep, recording, handling and delivery of orders, standards of business practices and even the range of product offerings, the added expense for wire service membership may be considerable.



The future may see wholesaler or shipper membership in wire services becoming more important. Already some wholesalers advertise a direct connection through a wire service console for placing orders. The time may come when all intra-industry orders originate through such telecommunications devices.

FTD [1982c] reports that, of approximately 36,000 florist shops listed in yellow pages directory listings in 1979 (even though the 1977 Census of Retail Trade [U.S. Bureau of the Census, 1979] reported 29,375 retail florist shops in 1977), only about 27,000 were listed in all "flowers-by-wire" directories (duplicates removed). FTD membership included 17,690 flower shops in 1980 [FTD, 1982c].

The proportion of shops belonging to any of the wire services, as reported above by FTD, has changed since the 1967 report by Havis. Havis had reported that 84 percent of all florists surveyed belonged to a wire service. One-fourth of these belonged to two or more "flowers-by-wire" organizations. Havis noted that only the small shop florist was not as likely to belong to a wire service, as only 77 percent of these belonged to any of the wire services. Medium, large and very large florists belonging to wire services consisted of 95 percent, 98 percent and 94 percent of the total surveyed, respectively [Havis, 1967].

Havis [1967] noted that wired flower sales accounted for about 20 percent of gross sales, about half for outgoing orders and about half for incoming orders. The smallest shops experienced slightly more sales from incoming orders, while other shops had a greater portion of sales from outgoing wire service orders. Sullivan et al. [1980, p. 267] suggested that nearly one-quarter of the average retail florist's gross sales can be attributed to wire service orders. Pfahl [1977, p. 239]

noted that an average 11.3 percent to 16.0 percent of the total sales volume of FTD members in 1972-73 were from FTD wire service business alone, depending on sales volume. Pfahl estimated that the larger the shop's overall sales volume, the smaller the proportion of the business that was attributed to FTD wire services.

Wire service orders also can involve substantial costs. Dues and subscriptions can be accompanied by monthly service fees, sometimes based on wire order volume. Telephone and telegraph bills can be exorbitant. (Pfahl [1977, p. 46] noted that telephone and telegraph fees amounted to between 1.4 percent and 2.4 percent of operating expenses of FTD members in 1972-73. While not all of this involved wire service transactions, the portion was no doubt significant.)

A partial alternative to some of these communication charges is the recently inaugurated computer console link-ups between retail shops and clearinghouses of several of the wire services. Console rental, however, can run over \$800 per year, depending on order volume. There is an additional amount charged for each order transmitted, over and above the clearinghouse costs discussed in Chapter VI. (Wire service commissions alone averaged between 1.6 percent and 3.6 percent of sales, depending on shop volume, in the 1962-1973 surveys of FTD members [Sullivan et al., 1980, p. 140].)

Firms in all segments of the industry experience the costs of various affiliations, however. Retailers have local allieds and state florist groups. Wholesalers have groups such as the Wholesale Florists and Florist Suppliers of America (WF&FSA) and other organizations to which they can belong. There are crop specific organizations and local and state grower organizations as well. All industry members can

affiliate with the Society of American Florists and Ornamental Horticulturists (SAF), and many contribute to a number of industry endowments or other causes. Sullivan et al. [1980, p. 140] noted that professional fees, dues/subscriptions and donations averaged from 0.7 percent to 0.9 percent of sales for FTD firms surveyed, depending on sales volume.

The current vs. fixed assets of firms naturally vary with the operation. One indication of this differentiation is provided by the 1981 Annual Statement Studies of the Robert Morris Associates. A survey of 87 wholesalers found that nearly two-thirds of the assets (67.1 percent) were reported as current assets, 26.8 percent as fixed, 0.5 percent as intangibles and 5.6 percent of assets were reported as other non-current assets. The 67 retailers surveyed listed an average 56.8 percent of assets as current, 35.0 percent as fixed, 1.6 percent as intangibles and 6.6 percent as other non-current assets [Robert Morris Associates, 1981]. Retail data provided by FTD [1982b] suggest that the average balance sheet of 975 retail florists in 1981 (with average sales of about \$150,000) was composed of an average 66.4 percent current assets and 33.6 percent fixed assets.

Inventory costs at the wholesale and retail levels of the industry can be divided between perishables and non-perishables; both can be enormous. Results of a 1977-78 survey of 787 FTD shops found that the cost of goods sold (for sales affecting inventory, i.e., excluding service charges, delivery charges, etc.) varied from 27.9 percent to 52.2 percent of sales. The median costs of goods sold in this survey was 44.2 percent of sales. The median costs of merchandise tended to decline with increased sales volumes [FTD, 1982c]. Retail income statements surveyed by Robert Morris Associates (67 firms) in 1981

showed cost of goods sold at an average 52.2 percent of sales; however, this figure has risen each year since the 1977-78 annual survey, when it was 45.8 percent of sales (a figure closer to the FTD median, for that year) [Robert Morris Associates, 1981].

In the perishables category, FTD reports that, in 1980, fresh flowers arranged accounted for a median 47 percent of sales of the members surveyed, while unarranged flowers were responsible for another 7 percent of sales (median levels). Foliage plants and potted blooming plants contributed 15 percent and 14 percent of sales, respectively. Non-perishables, including artificial silk flowers and plants (10 percent), dried and natural flowers and arrangements (6 percent), plastic flowers (1 percent) and giftware (2 percent (median levels) of sales), made up the remaining 17 percent of sales in 1980 [FTD, 1982c]. Hence, for the average single-unit FTD florist in 1980 with sales of \$150,200 (as reported in Chapter VI), cost of goods sold was about \$66,388 (i.e., 44.2 percent multiplied by \$150,200). Annual inventory requirements for this florist would then be approximately \$35,850 for cut flowers (i.e.,  $\$66,388 \times 0.54$  (47 percent arranged plus 7 percent unarranged) of sales), \$9,958 for foliage plants (i.e.,  $\$66,388 \times 0.15$ ), \$9,294 for potted blooming plants (i.e.,  $\$66,388 \times 0.14$ ) and \$11,286 for non-perishables (i.e.,  $\$66,388 \times 0.17$ ).

At any one time in the shop, inventory would be less. Yet, because non-perishables tend to have a much slower rate of turnover, inventory requirements can still be sizeable. Sullivan et al. [1980, p. 145] cited data compiled from FTD surveys of 1962-1973 regarding inventory turnover. Cut flowers turned over, on average, between 82 times per year for smaller florists and at an almost daily rate of 322 times per

year for larger florists; florists averaging \$100,000 in sales experienced 175 cut flower turns per year or about once every 2 days. Inventory turnover for plants averaged between 37 and 90 days, depending on the florist's sales, with those doing \$100,000 in annual sales experiencing the longest turnover period of 90 days. Non-perishable merchandise had only two to nine turns per year average. In all, total inventory turnover averaged between 15 and 27 turns per year, with larger florists experiencing more frequent turns. Florists with \$100,000 in sales annually experienced 23 turns per year on their merchandise [Sullivan et al., 1980, p. 145]. The average 1980 florist with annual sales of \$150,200 and annual inventory of \$66,388 would then have about \$2,800 in inventory at any time, if the inventory turnover rates suggested by the 1962-1973 FTD surveys still apply. At least 80 percent of this amount would be in non-perishables inventory. The 1980-81 Robert Morris Associates survey of 67 retail florists reports that inventory represented an average 23.2 percent of total assets for the firms surveyed [Robert Morris Associates, 1981]. However, an FTD survey of the balance sheets of 975 florists in 1981 indicated inventory represented only 20.0 percent of total assets [FTD, 1982b].

Inventory costs for the wholesaler vary greatly with the operation. Some carry no non-perishables inventory. The 1977 Census of Wholesale Trade [U.S. Bureau of the Census, 1979] reported year-end inventory for all 2,459 wholesalers at \$151,033,000 or \$61,421 average for each. Merchant wholesalers averaged almost double the year-end inventory that the agents, brokers and commission merchants reported; the former group averaged \$63,032 each, while agents, brokers and commission merchants reported an average \$31,579 year-end inventory. Operators with ware-

house space naturally reported greater inventories than those without space. Those using warehouses inventoried about \$76,600 each at year-end, whereas operators without warehouse space averaged only \$18,096 in year-end inventory. While merchant wholesalers with warehouse space carried an average of about 40 percent more inventory than agents, brokers and commission merchants with warehouse space (\$77,417 compared with \$55,209), those merchant wholesalers operating without warehouse space had over four times the year-end inventory (\$19,456 average) of the other wholesalers operating. Agents, brokers and commission merchants averaged only \$4,746 in year-end inventory. The Robert Morris Associates [1981] annual survey of wholesalers found an average (for 87 firms surveyed) cost of goods sold figure of 66.1 percent of sales with inventory representing an average 34.0 percent of total assets of the firms surveyed.

As for most businesses, florists incur other costs as well. Salaries and wages, according to the 1977-78 survey of florists by FTD [1982c], are a large expense category. Median expense levels for salaries and wages in the survey ran from 18.0 to 25.2 percent of sales, depending on the sales volume. Yet, almost one-third of the retail florists (32.7 percent) reported having no employees in the 1977 Census of Retail Trade [U.S. Bureau of the Census, 1979]. Employee costs are highly variable.

In many cases, the costs incurred can fluctuate with the season. While full-time staff might be employed year-round, there are definitely incentives for florists to have seasonal employees. The seasonality described in Chapter V provides such inducements at both the retail and wholesale levels of the industry.

Florists also experience other selling costs for items such as advertising and promotions, administrative expenses associated with bookkeeping, etc., bad debts, licenses, etc.

After all expenses, retail florists in the 1977-78 FTD survey of 787 retail florist members had median net profits of 3.6 percent of sales. The highest net profit in the sample was 17.7 percent of sales. The lowest return reported was a loss of 9.8 percent of sales [FTD, 1982c]. The median FTD net profit figure is well within range of the 3.9 percent to 4.5 percent of sales found for profit before taxes during the annual surveys of 1976-77 through 1979-80 by Robert Morris Associates [1981]. The recession era of 1980-81 appears to have taken its toll on retail florists as the 67 retailers surveyed during this year by Robert Morris Associates reported profits before taxes of only 1.7 percent of sales. However, an FTD survey of 975 firms in 1981 [FTD, 1982b] found net profits to average 3.2 percent of total sales. Alvi Voigt [1978], in a 1976 survey of 21 Pennsylvania retail florist businesses, found owners' net returns to vary between 2.0 percent and 16.9 percent, depending on sales volume and whether or not the operation included a greenhouse.

Similar data at the wholesale level came from the 1981 Operating Ratio Report of the Wholesale Florists and Florist Suppliers of America (WF&FSA) [1982]. Responses of 204 sales outlets for fiscal years ending in 1981 revealed that operators achieved an average profit level of 4.8 percent of sales. However, outlets with less than \$1 million in sales only recorded an average 2.5 percent of sales in profits, while outlets with sales between \$1 million and \$2 million in sales amassed average profits of 3.1 percent of sales. It was the larger outlets with sales

greater than \$2 million that largely accounted for the higher overall average; these firms had average profit levels of 6.2 percent of sales. However, the Robert Morris Associates' [1981] annual survey of wholesale florist firms reported an average profit before taxes of only 3.0 percent of sales for the 87 wholesalers surveyed with fiscal years ending 1980-81. For the four fiscal years 1976-77 through 1979-80, average profit before taxes for wholesalers surveyed was between 2.3 percent and 4.2 percent of sales. As a possible explanation to this discrepancy, WF&FSA [1982] does admit that its members probably do achieve greater profit levels than do wholesalers in general.

#### Growers' Costs

Unlike retailers and wholesalers, the producers of cut flowers find a much larger portion of their costs in the fixed category. Land and greenhouse costs are fixed. Equipment, no matter how elaborate or simple in nature, is usually considered a fixed cost, although some equipment, e.g., tractors, may be charged and/or depreciated to various crops in a variable manner on a cost-per-hour-of-use or cost-per-crop basis. Even items such as heating fuel might be considered at least partially a fixed cost, if growers find it necessary to heat entire ranges to some minimally optimal level, no matter the production level sought. In the case of multiple-year cropping, e.g., roses, orchids or carnations, the plant material may also be considered a depreciable asset. The capital requirements are indeed large when compared with other levels of the industry.

The capital investments of prime importance must be considered land and structures. The average U.S. producer of cut flowers (and cut



florist greens), according to the 1978 Census of Agriculture [U.S. Bureau of the Census, 1981], operated with 25,893.8 square feet (0.6 acres) of greenhouse or other protection and an additional 4.15 acres in the open. The average operator had sales of \$69,599. In 1980, Rotz and Heins valued glass greenhouse structures at an initial cost of \$8.00 per square foot; double-layered polyethylene structures were valued at half this amount. In 1982, Paul Daum, a salesman for Gloeckner and Co., Inc., who is often credited with being a force behind the South American floriculture expansion, estimated that it would take at least \$1.60 per square foot for only the frame of a simple sawtooth greenhouse with water but no heat.

Operators may rent land, but most buy their land, especially if permanent greenhouse structures are used. Although polyethylene-covered quonset hut style greenhouses are often considered temporary structures, producers using these structures will often own the land on which they are built, as the investments usually needed for improvements, e.g., leveling, water facilities, etc., almost necessitate land purchase. Producers operating in the more temperate climes who grow without protection may frequently rent land, however.

Other equipment costs may also be financially demanding. Depending on the crops raised, growers may require extensive equipment for successful greenhouse production. Supplemental lighting may be needed for production at levels sufficient for covering costs. Lighting is also a necessity for crop timing of photoperiodically sensitive species. Heaters, heat blankets, fans, water-pad systems, thermometers, thermostats, timers and other equipment are important for temperature modification. Tractors and other soil handling equipment, sprayers,

watering equipment, fertilizer injectors and many other pieces of equipment may be used for various greenhouse operations. Finally, refrigerated facilities for storage of cut flowers before shipping and grading machines, especially for large rose or carnation ranges, may also be required.

Some plant material can justifiably be considered a capital investment. Growers of roses normally expect plants to be used for several years; hence, such plants may be considered a depreciable asset. Similarly, orchid producers, many of whom are also involved in breeding, are likely to consider their plant material a large capital (and perhaps research and development) investment. Producers of birds of paradise, proteas, stephanotis, camellias, gardenias and other multiple cropping sequence plants could also treat their plant materials as long-term investments.

Growers naturally face other costs. The two largest cost categories in this respect are usually labor and fuel. However, with both of these, there may be some level of the input that could be considered fixed, while variable influences also exist.

Labor for many growers is the biggest expense category. Needs vary with the operation and the crop, as previously described (Chapter III). While the seasonal nature of production in many operations may allow for the employment of part-time or seasonal workers, some minimal level of employment may be required for greenhouse and/or plant care operations. Hence, reasons do exist for treating part of the labor expense as fixed and part of it as a variable cost.

Fuel costs vary with the crop and the particular operation as well, but they may also be influenced by the weather. Yet, as part of the

fuel bill must be considered minimally necessary, regardless of the desired level of production, there may also be an ambiguity as to whether the expense should be charged as a fixed or a variable cost. Minimal heat levels may be needed not only for frost protection of the crop but for snow-load protection of a greenhouse structure. Growers in the northern latitudes can, therefore, probably justify a minimal heating level as a fixed cost more easily than a Sunbelt operator.

Many operators are attempting to reduce fuel needs through conservation efforts. Building partitions to subdivide greenhouses or greenhouse ranges, use of heat blankets and other conservation measures may serve to reduce the fixed portions of the fuel bill (although the conserving mechanisms may replace fuel costs as fixed costs on the ledger). In some cases, greenhouse modifications have necessitated special care for maintaining snow-load protection in the otherwise unheated portions of greenhouses. However, through conservation efforts, the variable fuel bill is also likely to be reduced.

There are many other costs for the grower. Most are dependent on the operation, but most growers can expect to incur maintenance, water, fertilizer, administrative and the myraid of other costs associated with any agricultural business.

#### Risk Management Practices

Hypothesis H13 of Chapter II and its ancillary hypotheses address the issue of risk. This hypothesis suggests that, even though technical efficiency generally increases with size and specialization of a firm, risk also increases. Both increased risk and increased financial investments come with specialization. Where risks are substantial,

increases in firm specialization will be inhibited unless there is a means whereby risks can be shared.

The ancillary hypotheses point out that increased specialization results in reduced flexibility for the firm, reduces a firm's alternatives and erodes a firm's bargaining power. A firm that is highly specialized becomes more vulnerable to exploitation and more vulnerable to inequitable distribution of risk, responsibilities and returns. The conclusion is, then, that the desired level of specialization depends upon the rate of change in subsector demand and supply. Flexibility is more important than technical efficiency when there is rapid change in the subsector.

Hypothesis H14 adds that a tightly coordinated subsector experiences not only lower total costs per unit of output, lower prices to consumers, greater output and lower profits per unit, but it also experiences reduced levels of risk when compared with a loosely coordinated subsector.

These hypotheses have been reflective of the cut flower industry. As a subsector experiencing great change, flexibility, in turn, provides less risk, according to the hypotheses.

However, the microcosms nearest the large terminal wholesale markets provide particular examples which may seem contradictory. These markets, e.g., Boston, Portland, Los Angeles and San Francisco, are examples of cooperative marketing efforts. At each of these markets, several organizations (themselves cooperative marketing ventures) have joined forces to provide facilities for the marketing of floricultural products. This sharing of risks provides opportunities for increased specialization according to the hypotheses. Specialization does occur,

as some cases exist of growers and wholesalers maintaining single-species production or marketing operations. The risks associated with such specialization, or with increased size or financial investment, are less inhibiting in the presence of such risk-sharing ventures.

In areas not located near such markets, flexibility rather than specialization probably dominates. Many cases exist where growers have expanded not only the number of crops raised but where they have also entered other levels of the industry. More grower-wholesalers or grower-retailers probably can be found in areas away from the large wholesale markets. The less specialization leaves operators less vulnerable to exploitation and less susceptible to any inequities of the marketplace.

Finally, it should be emphasized that the loosely coordinated atmosphere of the cut flower industry yields increased risks for all parties concerned, relative to that which may exist under greater coordination. One need only compare the examples of Chapter VI. Some firms operate using average quantities sold when deciding on their daily inventory levels. As soon as an out-of-the-ordinary happening occurs, firms are either sold out, thus alienating customers, or overstocked, thus increasing chances of shrink. At the opposite end of the spectrum are well coordinated vertically integrated firms. Such firms can keep customers happy and shrink to some minimum by constant contact between growers, wholesaling and/or retailing operations. The many Colombian growers who keep in constant touch via telex with their Miami-based shipping and wholesaling arms are examples of relatively tightly coordinated operations in the cut flower industry.

Theory aside, one must note that the grower probably faces the largest amount of risk (greater than that of wholesalers and retailers) in the industry. Not only do growers generally have greater capital investments at stake than do most wholesalers or retailers, but their livelihood may depend in large part on the workings of Mother Nature, an entity out of their complete control. Many growers have "missed the market" at holiday times because of a few too many cloudy days occurring just before the plants began flowering. Wholesalers and retailers, on the other hand, have many sources of supply from which to purchase. As long as customers keep visiting shops, sales are almost assured.

The perishable nature of the product and the tremendous seasonality in consumption patterns readily translate into situations involving risk. Retailers, wholesalers and growers may all experience the risk associated with product shrink. However, growers, in that they must deal with the uncertainties associated with working with nature in their production processes (whereas retailers and wholesalers deal with a completed product), may operate with a risk-compensating pricing mechanism. If growers acted as risk averters, theory suggests they would prefer smaller steady incomes to erratic incomes, even if the latter average out to a higher amount. Hence, the higher prices paid the grower who assumes the added risk of "hitting the holiday" may in part include a "risk premium." This premium acts to compensate the grower for his normal aversion to risk. The fact that growers (and from a product shrink point of view, also retailers and wholesalers) can anticipate higher holiday prices (see Chapter V) encourages them to alter normal procedures to try and "hit" the market.

Risk can also become an issue when setting up or expanding a business. Havis [1967] found that almost one-third of the florists surveyed borrowed money, 50 percent for working capital, 18 percent for remodeling and 11 percent each for expanding the business and purchasing delivery vehicles. Only 4 percent of the florists were refused loans, and only 38 percent of these were refused because of insufficient collateral. Havis concluded that financing was not a problem for retail florists. Chapter VI elaborated on financing opportunities at all levels of the industry.

### Pricing

Figures 5-4 through 5-28 depicted monthly price fluctuations for the major cut flower species at the shipping point and wholesale market levels. Holidays obviously play a role in price fluctuations during the year. Table 4-4 also reported price movements over time, on a per flower basis, in both normal and deflated average annual values. The issue of pricing, however, is more involved than just the prices charged, particularly when addressing market behavior and performance. This section will focus on pricing issues as they affect this behavior and performance, while drawing upon much of the information first presented in Chapters IV and V.

### Price Variations in the Short Run

Table 4-4 showed that while nominal prices have risen for all of the major cut flower species over the last 25 years, the deflated values for each have declined over the period. It should be noted that not every species has experienced a decline in real price every year.

However, due to the undeniable downward trend in real values, growers might expect a continual decline in the real value of their production in the long run.

Yet, Table 4-4 shows that at least in the short run, the downward price spiral was not maintained each and every year. During the low inflation period of the 1960s, all cut flower species saw their real values rise. There also appear to be some differences in the rate of real value decline; hybrid tea rose producers seem to be the least affected by the drop in value, although they too experienced real losses in production value. Economic theory offers an explanation to both the real value declines and the variability exhibited in those drops with the laws of supply and demand. A drop in real prices over time results from supplies repeatedly exceeding demand. Periodic fluctuations in the rate of decline may result from temporary relaxations (in the short run) of the long run trend. For some crops, e.g., carnations, the long run phenomenon may be from increased supplies; for other species, e.g., gladioli, this appears to be better explained by a reduced demand (Tables 4-1 and 4-9 through 4-13).

Comparing product at either the grower level or the wholesale level, from growing area to growing area or from market to market is difficult because of the lack of uniformly adopted grades and standards. Without such standards, one cannot be sure the same product is being compared. Nevertheless, Tables 7-1, 7-2 and 7-3 attempt to depict the variability that can occur between prices for like product from various sources at shipping points, for like product from various sources but in the same wholesale market, and for like product from various sources in different wholesale markets. Carnation prices were used in each case as



Table 7-1. Depiction of Price Variability for Product from Different Sources Using Weekly California Shipping Point Prices (per bloom) for the First 13 Weeks (January to March) of 1978 to 1980, for Fancy Grade Carnations

Calendar Week	1978		1979		1980	
	Central Coast	San Diego County	Central Coast	San Diego County	Central Coast	San Diego County
1	9-10	10	14	14	16-18	16-18
2	10	10	12-14	14	16-18	16
3	10-12	11-12	13-14	14	16	16
4	14	12-14	14	14	16	16
5	16-20	15-16	16	18	17-18	18
6	20-22	20	22	20	24	22-24
7	20	18	18-22	20	24	22-24
8	18	18	18	18	22-24	22
9	14-16	14-16	15-16	18	20-21	20
10	12-14	12-15	13-14	14	18	16
11	12-14	12-16	12	12-14	15-16	12-14
12	12-14	12-14	10-11	12-14	12-14	12-14
13	10	12	10-11	12	14-16	14-16
----- cents -----						

----- cents -----

SOURCE: USDA, Marketing California Ornamental Crops [1979-1981].

Table 7-2. Depiction of Price Variability for Product from Different Sources Using Weekly Philadelphia Wholesale Market Prices (per bloom) for the First 13 Weeks (January to March) of 1978 to 1980, for Fancy Grade Carnations

Calendar Week	Colombia	California	Pennsylvania
	----- cents -----		
1978: 1	15-18	20	18
2	16-18	20	15-18
3	16-18	20	15-18
4	19-22	20-22	18
5	30-32	--	30
6	30-40	35-40	30-35
7	30-35	35	30-35
8	30	30-35	30
9	16-20	25	20
10	18-22	16-22	14-16
11	22-25	25-35	15-20
12	16-22	25-30	20-25
13	16-17	18-20	18-20
1979: 1	15-18	20	--
2	14-15	16	15
3	14-15	20	15
4	14-15	20	15
5	14-15	16-20	--
6	27-32	30-35	30
7	27-32	25-30	30
8	20-27	30	20
9	20	25	18-20
10	18	16-20	15-25
11	18-20	20-25	15-25
12	18-20	20-25	15-18
13	18	18-20	15-20
1980: 1	18-20	--	--
2	18-20	20	18
3	18-20	22-25	18
4	16-18	22	18
5	20-22	25	18-20
6	32-37	30	30
7	35-40	35-40	35
8	32-40	35	35-38
9	32-37	30-35	35
10	25	20-25	25
11	25	20-25	25
12	18-20	20-25	20-25
13	20-25	25-30	20-22

SOURCE: USDA, Ornamental Crops: Wholesale Market Prices [1979-1981].

Table 7-3. Depiction of Price Variability for Product in Different Markets Using Weekly Boston, Chicago and Philadelphia Wholesale Market Prices (per bloom) for the First 13 Weeks (January to March) of 1978 for California and/or Colombia Grown Fancy Grade Carnations

Calendar Week	Boston		Chicago		Philadelphia	
	California	Colombia	California	Colombia	California	Colombia
----- cents -----						
1	12-14	14	20		20	15-18
2	14	14	15-20		20	16-18
3	16	14-16	18-22		20	16-18
4	16	18	18-22		20-22	19-22
5	22	23	25-30		--	30-32
6	--	--	35-40		35-40	30-40
7	--	30	35-40		35	30-35
8	22-25	25-26	35-40		30-35	16-20
9	18-20	16-18	20-25		25	18-22
10	16	14-16	25		16-22	18-22
11	16-18	16	25		25-35	22-25
12	20	20-22	25		25-30	16-22
13	16-18	14-16	15		18-20	16-17

SOURCE: USDA, Ornamental Crops: Wholesale Market Prices [1979-1981].

carnation grades and standards, as proposed by the Society of American Florists, have probably been more uniformly adopted in the industry than have grades and standards for any other flower.

Table 7-1 shows how shipping prices can vary for product from two nearby yet different sources (Central Coast and San Diego County, California). Ironically, the product is supposedly identical, as product from both areas achieved the same grade (fancy). Neither the San Diego County produce nor the Central Coastal product consistently dominated the market in price.

Similar findings at the wholesale market level are revealed in Table 7-2. Here, supposedly similar produce from Colombia, California and Pennsylvania is compared in price at the Philadelphia market. Again, there is no uniform price leader throughout all the data.

The depiction of price variability in Table 7-3 may be most enlightening. As with the previous two tables, supposedly similar produce is differentiated by price, depending on source, even within the same market. Again, neither California nor Colombian produce acts as the market's price leader throughout the data. (Although California produce may appear to be priced higher than Colombian produce in Philadelphia, Table 7-2 showed that this is peculiar to the 1978 Philadelphia data, as the reverse was depicted several times in 1979 and 1980.)

Table 7-3 also shows that market competition, supply and demand or other factors also influence prices. Prices for California produce were often but not always higher in Chicago than in Boston or Philadelphia. Transportation distance from the West Coast to Boston and to Philadelphia obviously exceeds that to Chicago. The same phenomenon

was found in the Colombian produce sent to Boston and Philadelphia. Boston (the further distance from Colombia) sometimes displayed higher prices for Colombian produce than did the Philadelphia market; at other times, however, the reverse was true.

At retail, there is some evidence of both price variation and price stability in the short run. Chapter V noted that at holiday periods, considerable price movement was exhibited for roses at retail before and after the Valentine's Day holiday. The price variability was dependent on the market, but for those surveyed, the price rise was 34 percent at retail between January 25 and February 8. An average decline of almost 31 percent occurred during the following month [Zeller, 1981].

During non-holiday periods, some price stability may rule the retail market, however. Havis [1967] found that florists uniformly considered the cost of flowers when pricing arrangements. However, 54 percent of those surveyed also noted that they considered containers, while 34 percent cited accessories and 35 percent mentioned labor as costs specifically considered when pricing flower arrangements. It is probable that these other costs fluctuate a lot less rapidly than do the costs of the flowers. Furthermore, in most cases, the total of these other costs probably exceeds that of the flowers, especially in non-holiday periods when wholesale prices are lower (as shown in Chapter V). Hence, some short run price stability at retail in non-holiday periods could be justified.

Pfahl [1968, p. 139] pointed out that florists probably did not always achieve their sought after markups. He noted that, except for specials, florists probably were apt to maintain retail prices when input costs fell. Similarly, he noted that during tight markets or at

holiday times, florists were inclined to forego some of their margin to keep prices from rising too far out of line. He concluded that many florists tried to hold prices for flowers of the standard species at a constant level year-round.

Another short run price variation issue is raised by Hypotheses H39 through H42 of Chapter II. These hypotheses suggest that, in the presence of comparative price information, the dispersion of prices across stores for a standardized product (or group of products) would be reduced. Prior to such price dissemination, significantly different prices would be charged by competing sellers. However, with price information, the average market price level would drop, resulting in an increase in consumer satisfaction with stores and products. The perceived and estimated value of comparative price information would thus exceed any costs of providing such information. One would suppose that extensive advertising of prices by competitors would provide some of this comparative price information at the retail level. Market News Service price reports provide similar information at the wholesale and shipping point levels of the industry. Public auctions may provide similar comparative price information at the grower level. Comparative price information should then be a factor resulting in reduced prices between similar products and different concerns operating at the same market level. If prices are lowered at several subsequent stages of the market channel, it may also be hypothesized that price variations between market levels would also tend to diminish.

### Historical Differences Between Wholesale Markets

In perusing Market News price reports, one notices several things about the wholesale markets. First, relative prices between markets often depend on the crops under consideration and the markets being discussed. Some generalities can be made for some crops, while almost nothing can be said about the relative prices for other crops. Speaking of surplus and deficit production and consumption areas can be helpful.

Table 7-4 reproduces the 1978 list of the 10 leading producing states from Table 4-22 and the 10 leading states in retail florist sales in 1977 from Table 5-2. Several points should be noted. First, the data are from two different years. Secondly, production data do not include imported supplies and consumption data do not include non-traditional sales. Hence, the data do not truly reflect excess supplies and demand. Nevertheless, the data do suggest some trends in product flows.

California is obviously an excess producer. It ships the majority of its product out of the state but does consume a large amount locally.

One would expect local wholesale flower markets to have some of the cheapest flower prices in the country, at least for the locally produced species. Indeed, the San Francisco wholesale flower market does exhibit the lowest wholesale market prices for many of the major species, e.g., carnations, chrysanthemums and roses [USDA, Ornamental Crops: Wholesale Market Prices, various years].

East Coast markets also display a pattern for some crops. New York, Florida and Pennsylvania are three states which are each listed among both the leading producing and the leading consuming states. Furthermore, Florida houses the largest U.S. import site, Miami, where

Table 7-4. Comparison of the 10 Leading Producing States of Cut Flowers and Florist Greens with the 10 Leading States in Florist Sales

State	Production in 1978 (U.S. total \$352,519,000)		State	Consumption in 1977 (U.S. total \$2,400,026,000)	
	\$ millions	% of U.S. Total		\$ millions	% of U.S. Total
California	142.07	40.30	California	225.13	9.38
Florida	43.59	12.37	New York	159.68	6.65
Colorado	20.25	5.75	Texas	158.78	6.62
Pennsylvania	15.99	4.54	Illinois	146.31	6.10
Ohio	14.12	4.01	Pennsylvania	131.66	5.49
New York	13.08	3.71	Ohio	118.58	4.94
Hawaii	11.44	3.25	Florida	100.31	4.18
Indiana	9.92	2.81	Michigan	100.23	4.18
Massachusetts	7.78	2.21	New Jersey	76.72	3.20
New Jersey	7.18	2.04	North Carolina	64.31	2.68
10-state total	285.42	80.97	10-state total	1,281.71	53.40

SOURCE: Adapted from Tables 4-22 and 5-2.



over half of the U.S. supply of carnations and pompon chrysanthemums land. These producing areas, along with the large import sites (including New York City), keep these market areas competitively priced. Indeed, the Boston, Philadelphia and New York City wholesale market prices are often similarly below those of the Midwestern markets for some crops [USDA, Ornamental Crops: Wholesale Market Prices, various years].

With the notable exception for roses, Market News price reports from Chicago, Minneapolis, Milwaukee and St. Louis indicate that the Midwest may have some of the highest wholesale market price levels in the country for the major species [USDA, Ornamental Crops: Wholesale Market Prices, various years]. Although Colorado is a large producer of carnations (Table 4-15), the majority of carnation supply for most Midwestern cities probably comes from the merging of product from California producers and East Coast importers. A similar situation often exists for pompon chrysanthemums, gladioli and for other species; with these crops, coastal growers and importers allow relatively nearby East and West Coast wholesalers to charge prices which are frequently below those of many of their Midwestern counterparts. The higher wholesale price levels in the Midwest may in part reflect the longer shipping distances.

Roses may present another price pattern. As Table 4-18 showed, there are major rose producing states located in the East, the West and the Midwest. Prices of both hybrid tea and sweetheart/miniature roses may then reflect not only the relationships of supply and demand, but also the nearness to supply. Although Market News price reports show

the San Francisco wholesale market price levels to be by far the lowest for roses, prices in other areas are variable, and no clear patterns are immediately discernible. Philadelphia and New York often displayed prices slightly higher than average for hybrid tea roses, however [USDA, Ornamental Crops: Wholesale Market Prices, various years].

A review of Tables 4-15 through 4-21 may reveal further information about product flow for the major species and subsequently suggest likely relative prices for specific crops and market areas.

#### Historical Changes in Pricing Over Time

Table 4-4 showed the nominal and deflated per flower values of major cut flower species at the grower level. As the table showed, the real value of every major species has dropped in recent years, although the nominal prices have continued to rise. Yet, grower prices for gladioli and hybrid tea roses do compare in real terms with the prices growers received in the early 1960s.

Table 5-16 gave the nominal and real value of the FTD outgoing orders over time. This table showed that much of the same phenomenon that occurred in prices at the grower level has carried through to the retail level. Nominal prices have risen. Real prices have fallen.

Chapter V also provided a description of price movements throughout the year. In recent history, prices at all levels of the industry have generally responded to holiday periods. Figures 5-4 through 5-28 depicted the price volatility for the various (major) cut flower species. Tables 5-11 and 5-12 further summarized the high and low shipping point and wholesale market prices, respectively. Valentine's Day (February), Mother's Day (May) and Christmas (December) are

characterized by price peaks; the summer months include most of the low price points. Zeller [1981] found similar price volatility at the retail level.

#### Price Variability Within and Between Markets at Retail

In surveying over 2,500 retail florists in 1964-65, Havis [1967] found that most florists used a three-to-one markup in selling cut flowers. The markup for unarranged flowers was closer to 2.5-to-one. Furthermore, larger florists tended to have higher markups than their smaller counterparts. Retailers tended to use lower markups in the pricing of higher priced commodities, no matter the size of the operation [Havis, 1967, p. 43].

As previously noted, Havis also found that florists used various factors in determining retail prices. Although all florists surveyed used flower costs in their retail price determinations, 54 percent also claimed to consider the cost of the container. Accessories used in the arrangements were considered by 34 percent of those surveyed, and 35 percent of the retailers claimed to include a labor factor in determining their retail prices. Even in 1964-65, before most florists had separate delivery charges, 6 percent of those surveyed also considered delivery in figuring retail prices [Havis, 1967, p. 44].

Havis [1965] also revealed that 38 percent of those surveyed charged the same for arranged or unarranged flowers, justifying this by the fact that many of the same or similar services were required (e.g., flowers still used a box and/or wrapping paper in lieu of a container). In addition, another 34 percent of the florists offered to arrange flowers free, although most florists tried to sell some accessories with

the flowers. Still, florists in 1964-65 often gave some accessories away to customers, e.g., ribbons, wires and greens.

Times and pricing patterns have no doubt changed since Havis' research. With florists using a much broader line of containers and accessories, consideration of these costs is of greater importance. By 1980, delivery costs were covered by a separate charge at 83 percent of FTD members' shops [FTD, 1982c]. With the advent of computers, many shops now make pricing decisions based on very detailed calculations which account not only for flower costs and costs of containers, accessories and greenery but also for the costs of labor, preservatives, refrigeration, promotions and many other inputs. Pricing is likely to become more and more of a science.

As florists consider different factors in determining their retail prices, the variability in prices for like goods between florists can become substantial. Indeed, retail price variability makes flowers something worth shopping around for in many instances. Not only can the variance in services, containers and accessories offered by various florists contribute to such variation, but the variance in wholesale flower prices, as discussed previously, can add to the price disparity. The range of grades and standards, quality, and age of the flowers used may also affect the arrangement or its price. The fact that florists are independent businessmen, each operating in his or her own way, adds to his price variance as much as any factor.

It is also possible that part of the variability in prices at retail may reflect a structural pattern in the industry of a particular locale. In a theoretical city where florists operate in a perfectly competitive environment, one would expect no price variation. In such a

market, firms and consumers both have complete information of prices and all parties take advantage of this information at every opportunity [Henderson and Quandt, 1971, p. 104]. Hence, price is equalized in the marketplace. Assuming no transfer costs, florists between markets would even price identically in the presence of perfect competition. Of course, such perfect competition exists only in a theoretical world.

Similarly, in a market with only a few firms, price variability for a like product will be low. Firms will monitor each other in such an instance and react to each others price moves. In fact, in the theoretical case of a monopoly, price variability is again reduced to zero as there is only one firm operating with only one price at any time.

Alternatively, florists may operate in a sort of hybrid state called monopolistic competition. Here firms offer similar but differentiable products. Like products are altered by various packaging (e.g., different flower grades, containers, filler flowers, greenery, ribbons, etc.), advertising or by associated services. Hence, an arrangement of one dozen flowers might actually be slightly different or it may be perceived as being slightly different by consumers, depending on its origin. Prices for these similar but not homogeneous packages will vary.

Ascertaining the difference in products of various competitors is not always easy. The costs of time plus other search costs (telephone, travel, etc.) for shopping around can, in fact, be quite enormous. In larger locales, there may be more competitors to serve the populace and these firms may be spread over a wider area. This, in turn, may lead to greater variation in product and in price, as the search costs and

information costs rise. Hence, one might expect a larger metropolitan area to have a great price variation for like product, as well as more variations of a similar theme.

To illustrate the variance in retail prices likely to be found in various markets, data obtained from selected FTD test order surveys [FTD, 1981] were analyzed. The retail prices charged for one dozen carnations arranged, one dozen sweetheart roses arranged and one dozen hybrid tea roses arranged were solicited (via telephone) as part of the test. The responses were compared by date and city but only when at least three florists could be quoted for all three of these arrangements. Using this restriction, price quotes from 427 retail florists were compared. The quotes varied by date (23 different dates), cities (10 selected cities) and year (1978, 1979 and 1980). All surveys were conducted during the months of January, May, August, September, November and December. For any city, prices were compared for between 22 and 69 florists.

A statistical analysis of the prices for these three arrangements was conducted. In particular, the coefficient of variation (c.v.), a unitless measure of relative variance, was examined. (The coefficient of variation is equal to the standard deviation of a sample divided by the sample mean; it is multiplied by 100 to appear in percentage terms. Being unitless, it is preferred here, as it allows for comparison of relative variances in the sample, without particular mention of the prices charged (which may vary considerably themselves, depending on the time of the year of the sample).)

An example of the use of the coefficient of variation is warranted. A coefficient of variation value of 20.0 would suggest that, under the

conditions of a normal distribution of prices in the marketplace, 68 percent of the prices found in the marketplace do not deviate from the mean value (in that marketplace) by more than 20 percent. (The 68 percent is implied by one standard deviation from the mean.)

Furthermore, 95 percent of the prices found would lie within the range of 40 percent ( $2 \times 20.0$ ) of the mean value (two standard deviations), and virtually all (99.7 percent) of the prices would lie within the range of 60 percent ( $3 \times 20.0$ ) of the mean value (three standard deviations). With this example, there is not much variation statistically; however, if the mean price for a commodity were \$15.00, a c.v. of 20.0 would indicate that 68 percent of the prices fell between \$12.00 and \$18.00 (i.e., 20 percent of \$15.00 equals \$3.00, applied below and above the mean). This \$6.00 dispersion for 68 percent of the prices charged in the marketplace may already be enough to make shopping around worthwhile for many consumers.

Results, as discussed below, indicate that there is minimal variance statistically in the prices florists charge for these arrangements. Nevertheless, in terms of dollars, this variance can be notable. Although variation may in part be due to time, cities or particular florists sampled, the results will be presented to show how prices may vary within or between markets. No effort will be made to attribute cause for such variation other than the hypotheses already discussed relating to inputs, competition and size of the market area.

The first factor compared was time. For both hybrid tea and sweetheart roses, the amount of price variation between florists sampled increased with time (Table 7-5). For example, price variability increased 14.4 percent for hybrid tea roses and 17.5 percent for

Table 7-5. Summary of Results by Species and Year of Study of Price Variances Within and Between Retail Markets

Price of Arrangement of One Dozen:	Year	Coefficient of Variation (C.V.)	Relative Change of C.V.	Cumulative Change in C.V.
----- (%) -----				
Standard carnations	1978	17.908	-4.6	] +6.9
	1979	17.084	+12.1	
	1980	19.149		
Sweetheart roses	1978	16.417	+17.5	] +47.0
	1979	19.284	+25.1	
	1980	24.132		
Hybrid tea roses	1978	14.825	+14.4	] +61.8
	1979	16.963	+41.4	
	1980	23.979		



sweetheart roses between 1978 and 1979, i.e., the range of prices charged was substantially increased over the period. Similarly, between 1979 and 1980, the variance in prices charged increased 41.4 percent for hybrid tea roses and 25.1 percent for sweetheart roses. A slightly altered scenario was found for carnations. Carnation price variability did increase between 1978 and 1980 (6.9 percent), but the variance of prices charged by those florists sampled declined 4.6 percent between 1978 and 1979, followed by a 12.1 percent rise in variability between 1979 and 1980.

(It is important to note that there is a big difference between saying prices increased and price variability had increased. For all three species, mean prices increased every year. The only thing being discussed above, however, is the variance of prices charged by various florists sampled.)

Other than population size of the city and the related competitive atmosphere, as noted above, there is no inherent reason to expect a greater variability in prices charged in one city when compared with another. Yet, the FTD data did exhibit considerable differences between markets. Table 7-6 summarizes the findings. For instance, 1978 data comparing the three retail price quotes of florists in Boston, Chicago and Milwaukee showed that the Chicago florists surveyed displayed considerably more price variability than did those in the other two cities. (Chicago is by far the largest of these cities.) The same Chicago area florists also had the lowest mean prices for all three arrangements. Neither Boston nor Milwaukee florists showed the least price variability across all three arrangements, however.

Table 7-6. Summary of Results by Year, Species and City of Study of Price Variances Within and Between Markets

City	Coefficients of Variation (c.v.) in Percent <sup>a</sup>		
	Standard Carnations	Sweetheart Roses	Hybrid tea Roses
<u>1978</u>			
Boston	17.485	14.243	11.265
Chicago	18.036	17.143	14.666
Milwaukee	15.192	12.500	12.077
<u>1979</u>			
Los Angeles	18.077	20.039	18.897
Miami	11.687	16.649	11.403
Philadelphia	17.393	19.943	17.164
<u>1980</u>			
Dallas	13.833	22.258	16.828
Fort Worth	16.445	18.930	29.358
San Francisco	13.543	17.994	12.848
St. Louis	17.757	16.065	14.872

<sup>a</sup>Coefficients of variation are comparable. Greater variance in prices charged is indicated by the greater values.

The 1979 data compared florists in Los Angeles, Philadelphia and Miami. Los Angeles area florists consistently showed the most price variability. Miami florists were the least variable in these pricing habits. Again, populations may be involved as Los Angeles is the largest of these cities, while Miami is the smallest.

No clear pattern was exhibited by the 1980 data which compared florists in Dallas, Fort Worth, San Francisco and St. Louis. For carnations, St. Louis area florists exhibited the most price variability while San Francisco florists displayed the least variance in carnation arrangement prices. For sweetheart roses, however, St. Louis area florists were the least variable in price, while Dallas florists had the most dispersed prices. Hybrid tea rose arrangement price variation was greatest in Fort Worth and least in San Francisco. It should be noted that these cities do not exhibit as great a spread in population as seen for the cities sampled in 1978 and 1979. Furthermore, the presence of San Francisco (the city which has the wholesale market often exhibiting what are by far the lowest prices, as previously discussed) as the city of highest population may complicate the expected price variability pattern.

Ironically, perhaps, no particular arrangement seemed to exhibit an exorbitantly greater amount of retail price variation than another. Including all florists surveyed, the amount of price variation displayed by carnation arrangements was the least (c.v. = 21.056). Displaying about 3 percent more variance were those prices charged (survey wide) for hybrid tea roses (c.v. = 21.677). Finally, prices charged for sweetheart roses showed 9.2 percent more variation (c.v. = 22.991) than did carnation prices.

The discussion will be ended with a warning and a conclusion. Statements about trends in time or trends between cities might more accurately be supported if comparable data for dates and cities were analyzed over time. Such data were not available in this instance. This analysis was only conducted to support the hypothesis that there was considerable dispersion in prices within and between markets. Although statistically the variance in prices is not high, the coefficients of variation alone indicate that there may be notable differences in dollar prices charged in a marketplace.

Finally, the conclusion that there are great variations in prices charged in the marketplace may suggest that shopping by the consumer may be warranted. Time, as noted in the discussion of Becker's theories of hedonistic satisfaction and time (Chapter V), has a cost as well. When prices are solicited by telephone, as was done for this survey, florists may not adequately be able to market and consumers may not adequately be able to detect differences, however minor, in these "like bundles." Yet, with the differences in prices quoted yielding a high price of at least 3.5 times the low price for all three arrangements (sometimes such a spread was evident even within the same city on the same day), it may be worth some of the consumer's time and effort to compare prices. (Statistically, however, the chances of selecting the highest- or lowest-priced florist with a single sampling from a population of florists is small.) In such an atmosphere, it may also pay the florist to include the advantages of his particular product or its price in the firm's advertisements.

### Price-Cost Relationships

The discussion of marketing margins in Chapter V deserves brief review here. For the major cut flower species surveyed, the average wholesale marketing margin was found to be 42.8 percent. Retail marketing margins of 83.0 percent, 79.5 percent and 75.0 percent of the retail price were discovered for carnations, sweetheart roses and hybrid tea roses, respectively. Yet, none of these figures necessarily represent the average marketing margins for all goods sold by a wholesale or retail firm.

The 1981 Operating Ratio Report of the Wholesale Florists and Florist Suppliers of America [WF&FSA, 1982] suggested that the 204 WF&FSA member wholesalers surveyed operated at a 30.3 percent margin for all goods sold, although the report indicated that the average for all wholesalers falls between a 25 percent and a 28 percent margin. The survey participants averaged a 32.2 percent margin for hardgoods, a 28.7 percent margin for perishables purchased and a 22.9 percent margin for goods consigned. Profits before taxes averaged 4.8 percent of sales. The 1977 Census of Wholesale Trade [U.S. Bureau of the Census, 1979] revealed operating expenses (including payroll) accounted for 25.8 percent of sales of merchant wholesalers. The 1981 Annual Statement Studies of the Robert Morris Associates [1981] suggested that average profits for floral wholesalers it surveyed was only 3.0 percent of sales (before taxes).

At retail, FTD data suggest that retail florists in 1977-78 operated with a median 44.2 percent of sales for cost of merchandise sold (i.e., for sales affecting inventory) [FTD, 1982c]. This would correspond to a gross profit margin of 55.8 percent of sales. The

Robert Morris Associates [1981] indicate a 1977-78 gross profit margin of 54.2 percent of sales for the retail florists it surveyed.

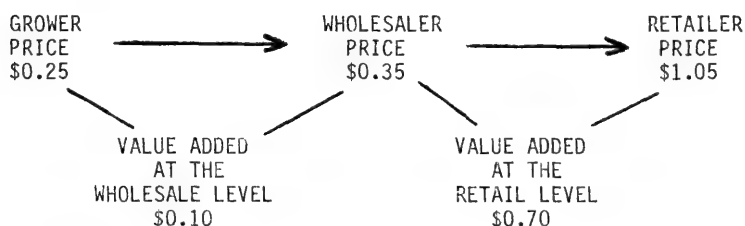
Havis's [1967] research of 1964-65 suggested florists used a three-to-one markup for flowers. This would correspond to a 67 percent gross profit margin. Sullivan et al. [1980] noted, however, that use of the standard three-to-one ratio markup by many florists has resulted in a decline in profit margins in recent years, as overhead costs have increased faster than wholesale prices. Hence, one might expect that a 55 percent (of sales) gross profit margin for the industry to be quite realistic for all goods sold. This would still agree with the consensus of many that were interviewed by this author (during his travels) that many florists still used a two- to three-time markup for their cut flowers.

#### Value Added and Profits at Different Stages

Chapter VI reviewed the marketing channels and the roles of channel participants at each stage. It was pointed out that flowers seldom change form until they reach the retailer, unless the wholesaler is altering bundle size or is involved in the "manufacture" of mixed bouquets or premade arrangements. Yet, product prices change at each stage of the marketing channel as various handlers account for the services they have rendered. The increase in product price at each stage of the marketing channel can be referred to as the value added.

Marketing margins, in terms of dollars, correspond to this value added by each market channel member. For product that travels the traditional route from grower to consumer via a wholesaler and a retailer, the increase in product price can be easily followed.

For example, if a grower sells a cut flower to a wholesaler for 25 cents, who in turn resells that cut flower to a retailer (by first taking a 28 percent gross profit) for nearly 35 cents, who finally takes a three-to-one markup and sells the flower to a consumer for \$1.05, the value added at each stage of the market channel can be determined as follows:



In this example, the value added at the grower level, at the wholesale level and at the retail level, each as proportion of the total value added in the subsector is 23.8 percent (i.e.,  $\$0.25/\$1.05$ ), 9.5 percent (i.e.,  $\$0.10/\$1.05$ ) and 66.7 percent (i.e.,  $\$0.70/\$1.05$ ), respectively. This example, if typical, illustrates that the traditional retailer assumes the role of being the one responsible for the largest share of the final cost. Florists using a standard three-to-one markup on all products will always account for two-thirds of every retail price.

Another example is warranted. Using the price analysis of Chapter V, a carnation in 1980 had an average grower price of \$0.11 (Table 4-4). If such a carnation were to be sold to a wholesaler operating with a 38 percent gross profit margin (Table 5-15), he would sell it for almost \$0.18. A retailer using an 83.0 percent marketing margin (Chapter V) would, in turn, sell the carnation for about \$1.05. The value added at

the grower level, at the wholesale level and at the retail level, each as a proportion of the total value added in the subsector, is 10.5 percent (i.e.,  $\$0.11/\$1.05$ ), 6.7 percent (i.e.,  $\$0.07/\$1.05$ ) and 82.9 percent (i.e.,  $\$0.87/\$1.05$ ), respectively.

Finally, one might want to consider the case of the mass marketer who buys prefabricated bouquets directly from a wholesaler for \$1.50 each. Mass marketers, it has been reported, generally operate at a 35 percent to 50 percent gross margin for cut flowers [Kress, 1976b]. Assuming a 50 percent gross margin, the retail price on such a bouquet would be \$3.00, or implementing the oft-used mass market practice of odd pricing, the bouquet might more typically be priced at \$2.99. Here, the mass marketer is responsible for about 50 percent of the total value added in the subsector.

Herb Mitchell [1983] studied cut flowers moving through a grower-to-shipper-to-wholesaler-to-retailer market channel. He found that, to maintain a minimum level of profitability, the shipper had to operate with at least a 25 percent gross profit margin, while the wholesaler and the retailer each had to maintain a 38 percent and a 60 percent gross profit margin (plus design labor), respectively. Hence, a flower might be bought from a grower for \$1.00. The shipper marks this up to \$1.35, but counting freight, box and handling charges, the wholesaler in reality pays \$1.60 for the flower. The wholesaler in turn sells the product for \$2.60 and, according to Mitchell, a full-service florist would be forced to sell this for \$6.50 (plus design labor) to maintain a minimum profit level. Diverting slightly from Mitchell's analysis (to take into account the \$1.60 rather than the \$1.35 paid by the wholesaler



to get his product and associated services), this transaction process is summarized as follows:

	GROWER	SHIPPER	WHOLESALE	RETAILER
Price (\$)	1.00	1.60	2.60	6.50
Markup (%)	--	60.0	62.5	150.0
Gross Profit (%)	--	37.5	38.5	60.0
Value Added				
-\$	1.00	0.60	1.00	3.90
-% of total	15.4	9.2	15.4	60.0

Again, it is apparent that the retail florist is responsible for the majority of the value added in the subsector.

In another vein, one should consider the value added by the entire subsector. In Mitchell's [1983] study, for example, the subsector added \$5.50 in the course of marketing the product. This translates into an 84.6 percent value added (i.e., \$5.50/\$6.50).

An attempt will be made to ascertain the value added by the entire subsector as well as the value added and the gross profit margins for each level of the marketing channel. To a certain extent, this will be tenuous, as several assumptions, none of which are necessarily correct, will have to be made in order to allow these computations to proceed.

#### The Value Added by the Entire Subsector

The 1977 Census of Retail Trade [U.S. Bureau of the Census, 1979] suggested that retail florists had sales of \$2,400,028,000. The Florists' Transworld Delivery Association's (FTD) [1982c] 1977-78 survey of member firms found that sales of arranged and unarranged flowers totalled about 54 percent of sales. During a previous survey conducted in 1975, FTD [1977] found such sales accounting for between 52 and 60 percent of total sales, depending on whether the shop concerned was a

single unit or part of a multi-unit firm and whether it was located in a top-, other- or non-metropolitan area. (FTD [1982a] also suggests that a median 11.2 percent of its members' sales dollars do not affect inventory as they account for delivery, service charges, etc.; although an accountant might want to exclude these sales when calculating the cost of goods sold, they are dollars paid by consumers for services rendered. Hence, any such exclusion of sales dollars will be ignored in figuring the value added by the subsector.)

It is assumed that the 54 percent of sales involving cut flowers for FTD members is uniform throughout the industry. Estimates of retail sales for traditional florists which involve cut flowers are, therefore, calculated as follows:

$$\$2,400,028,000 \times 0.54 = \$1,296,015,120.$$

The figure is expanded to account for cut flower sales made in the non-traditional sphere. Both The Floral Index [various issues, 1979, 1980] and Sullivan et al. [1980] estimate that traditional florists account for approximately 90 percent of cut flower sales. Assuming these estimates are accurate, the value of retail cut flower sales is expanded to account for both traditional and non-traditional outlets as follows:

$$\$1,296,015,120 \div 0.90 = \underline{\$1,440,016,800}.$$

Next, a figure for cut flower supplies as they enter the marketing channel must be determined. The 1977-78 Floriculture Crops report of the USDA [1979] lists \$213,490,000 in sales of major cut flower varieties for the chief producing states and for growers with sales of at

least \$10,000 for 1977. (To gauge the scope of this figure, data from the 1979 Census of Horticultural Specialties were contrasted with those of the Floriculture Crops report for 1979. The Census does not exclude minor varieties, minor producing states or smaller growers; it found, as one might expect, a substantially higher total for U.S. cut flower production. As a matter of fact, the 1979-80 Floriculture Crops report [USDA, 1981] listed only \$242,674,000 in sales for 1979 or only 69.26 percent as much as the \$350,419,000 found in the 1979 Census of Horticultural Specialties [U.S. Bureau of the Census, 1982]. (Ten years earlier, the 1970-71 Flowers and Foliage Plants report [USDA, 1972] (the previous title for the USDA Floriculture Crops annual summary) accounted for 75.7 percent of the total value listed in the decennial Census of Horticultural Specialties [U.S. Bureau of the Census, 1973]; as a more elaborate methodology was adopted for the 1979 Census (in an effort to gain better coverage), this fact will be ignored.) It is assumed, therefore, that the 1977 Floriculture Crops report's figure of \$213,490,000 [USDA, 1979] only reflects about 69 percent of total U.S. production of cut flowers. The figure is expanded as follows:

$$\$213,490,000 \div 0.69 = \$309,405,797.$$

Trade must also be reflected. Unfortunately, trade figures only account for shipments of at least \$251 in value, and many shipments are thought to arrive valued at less. Nevertheless, flower imports of \$38,310,000 were recorded by the U.S. Bureau of the Census in 1977 [USDA, Marketing Florida Ornamental Crops, 1978], and \$9,439,625 in cut flower exports were reported [USDA, Marketing California

Ornamental Crops, 1978]. Accounting for trade, then, total cut flower supplies at their U.S. origins (i.e., domestic growers and import sites) for 1977 are calculated as follows:

$$\$309,405,797 + \$38,310,000 - \$9,439,625 = \$338,276,172.$$

To calculate the value added by the entire subsector then, one proceeds as follows:

$$\begin{array}{rcl} \$1,440,016,800 & - & \$338,276,172 = \$1,101,740,628 \\ \text{(retail trade)} & \text{(value at origin)} & \text{(value added)}. \end{array}$$

Dividing the value added dollars by total retail trade dollars determines the marketing margin for the entire subsector, as follows:

$$\frac{1,101,740,628}{1,440,016,800} = 76.50\%.$$

It should be noted that this margin does not account for product shrink. As some proportion of the product at its origin certainly fails to make it through the entire market channel to the consumer, the marketing margin for only that product which gets sold at retail is necessarily higher. Nelson [1978, p. 10] reported that, at an Ohio State University-sponsored National Floricultural Conference on Commodity Handling, it was estimated that 20 percent of the flowers harvested end up unsuitable for sale. Hence, there is reason to suspect a notably higher marketing margin on final product sales than the data may indicate.

### Value Added by Each Level of the Subsector

Calculating the value added for each level of the subsector can be somewhat of a challenge due, in part, to the varied nature of the marketing channel that was depicted in Figure 6-6. Exemplifying this is the fact that only 66.1 percent of sales by wholesale florists in 1977 went to retailers, while 23.3 percent of these sales were made to other wholesalers [U.S. Bureau of the Census, 1977 Census of Wholesale Trade, 1979]. Furthermore, as some retailers produce some of their own product, total retail cost of goods sold could theoretically exceed the sales of wholesalers to retailers. But perhaps the biggest liability of the data is their failure to account for product shrink. As product moves through the market channel, sales value is increased due to the value added by each subsector level; however, the increased value is divided over fewer units (except as the varying market channel provide additional input flows). Nevertheless, attempts will be made to approximate the value added for traditional retail sales, traditional retail trade of perishables only, total wholesale trade and wholesale trade of perishables only.

Traditional retail trade--total. The 1977 Census of Retail Trade [U.S. Bureau of the Census, 1979] states that ("traditional") retail florists sales for 1977 were \$2,400,028,000. FTD [1982a] suggests that the median cost of goods sold of the florists it surveyed in 1977-78 was 44.2 percent for all goods (although the range was from 27.9 percent to 52.2 percent of sales). The Robert Morris Associates [1981] Annual Statement Studies found an average cost of goods sold of 45.8 percent for firms surveyed with fiscal years ending June 1977

through March 1978. Averaging these two results yields a 45.0 percent cost of goods sold. Hence, if one assumes these two surveys are indicative of the industry as a whole, i.e., the cost of goods sold are 45.0 percent, then the traditional retail industry value added is 55.0 percent or approximately \$1.3 billion.

Traditional retail trade--perishable cut flowers only. FTD [1982c] reported that a median 47 percent of sales of surveyed member florists involved fresh flower arrangements while another 7 percent involved unarranged fresh flowers in 1980. If one assumes these facts apply to the industry as a whole and for 1977 as well, then about 54 percent of the approximately \$2.4 billion in sales at retail florists for 1977 or \$1.296 billion can be said to have involved perishable cut flowers. Now, if one were to make the (probably unrealistic) assumption that the same 45 percent cost of goods sold figure previously used for all flower shop sales applied to cut flower sales, then the cut flower value added figure (55 percent) would be \$712.8 million. However, cut flowers, being one of the cheaper items in the flower shop, probably receive a higher than average markup. In 1964-65, Havis [1967] did find that florists tended to mark their less expensive items up proportionately more than the more expensive items. Furthermore, as previously noted, Mitchell [1983] found that full-service retail florists needed to mark flowers up using a 60 percent gross profit margin to maintain minimum profitability, not counting design labor. Finally, a gross profit margin of 83 percent was found for retailers in Chapter V.

Wholesale trade--total. The 1977 Census of Wholesale Trade [U.S. Bureau of the Census, 1979] reports wholesale sales of flowers and

florist supplies of \$1,954,163,000. While not all of these sales were made to retailers or even to other wholesalers and retailers, this figure must still serve as the starting point. All of these sales were made by wholesalers, and the value added for the industry accounts for the gross profit margins on all sales.

The Wholesale Florists and Florist Suppliers of America (WF&FSA) [1982] surveyed its members in 1981 and found an average 30.3 percent gross profit margin on all goods sold. They noted, however, that the gross profit margin industry-wide probably ran between 25 and 28 percent. Nelson [1978, p. 457] noted that wholesalers generally charged a 25 percent commission on sales. Hence, the wholesale sales gross profit margins probably range between about 25 percent and 30 percent for the industry. If one assumes this range for the 1977 census year, then the approximate \$1.954 billion in wholesale sales probably included between \$488.5 million (i.e.,  $0.25 \times \$1.954$  billion) and about \$586.2 million (i.e.,  $0.30 \times \$1.954$  billion) in value added. If one wants to consider only the sales to retailers, then applying the 66.1 percentage for sales to retailers from the 1977 Census of Wholesale Trade [U.S. Bureau of the Census, 1979] to these values would indicate between about \$322.9 million and \$387.5 million in value added (to sales to retailers) by wholesalers.

Wholesale trade--perishables only. The 1981 Wholesale Florists and Florist Suppliers of America (WF&FSA) [1982] survey of members suggests that 64.1 percent of wholesale sales relate to perishables. (Unfortunately, these sales are not limited to cut flowers.) If one assumes the same percentage applied during the 1977 census year, then

about \$1.25 billion in perishable sales could be said to have been made at wholesale in 1977 (i.e.,  $0.641 \times \$1.954$  billion). If one assumes that the 25 percent to 30 percent gross profit margin range previously used on total sales applies uniformly to the sale of perishables, then a range of values added can be derived. (Indeed, WF&SFA [1982] reported members using a 28.7 percent gross profit margin on perishables.) For total perishable sales, the value added can be said to range between \$313.1 million (i.e.,  $0.25 \times \$1.25$  billion) and \$375.8 million (i.e.,  $0.30 \times \$1.25$  billion). For only those 66.1 percent of sales made to retailers (if it is assumed they purchase an equivalent level of perishables as they do for all goods) the wholesale value added for perishable sales to retailers ranges between about \$207 million and \$248 million.

Value added at each level--summary. It was initially assumed that the cut flower supply for the industry in 1977 was about \$338.28 million. Wholesalers added between 25 and 30 percent gross profit margin (value added) and traditional retailers added another 55 percent gross profit margin to the retail cost of cut flowers. Final traditional retail sales value of cut flowers (including sales of non-traditional merchants) was assumed to be \$1,440,016,800.

Given the data, it is not practical and it is indeed impossible to follow the same flower dollars through the market channel. Various factors contribute to this predicament. They include the variable nature of the market channels, product shrink and the addition of handling, freight and miscellaneous charges (which industry operators are often reluctant to claim as part of their marketing margins, blaming



these costs instead on the trucking industry). Some of the assumptions made and the fact that new product can be injected into the system even beyond the wholesale level (due to grower-retailers and direct grower-to-retailer shipments) also complicate matters. Nevertheless, some value added figures were derived (and are needed so the analyses can continue). The value added for the entire subsector was found to be \$1,101,740,628 for cut flower sales only. At the traditional retail level of the industry, a total of about \$1.3 billion in value added was derived, with \$712.8 million (54 percent) being appropriated (for a minimum level) to value added for perishable cut flower sales. At the wholesale level of the industry, a range of values added between \$488.5 million and \$586.2 million was offered. A similar range, accounting for 64.1 percent of sales, was found for the value added for wholesale sales of perishable products, i.e., \$313.1 million to \$375.8 million.

#### Value Added Per Employee and Per \$1,000 Assets

An indication of the level of productivity in the industry is to look at the value added per employee and per \$1,000 assets. While one may want to look at sales per employee or sales per man-hour as a measure of productivity within a firm, examining the amount of the value added at each level of a subsector is considered a better method of evaluating productivity as product moves through a market channel. Relating the value added to the asset level at each stage of the subsector further compares productivity with the investment at various levels in the subsector.

Retail. FTD [1982c] data reveal that average sales per man-hour for shops surveyed were \$11.49 for single-unit shops and \$13.43 for multi-unit firms in 1980. If one assumes that, in full-time equivalents, the average employee works or is paid for 2,080 hours per year (i.e., 40 hours per week x 52 weeks), then the sales per employee per year would be about \$23,899 and \$27,934 for single- and multi-unit firms, respectively.

In the previous section it was assumed that the retail value added for 1977 was about 55 percent of retail sales. Hence, assuming the same level of value added for 1980, the value added per employee per year for single-unit shops is about \$13,144 (i.e.,  $\$23,899 \times 0.55$ ). The equivalent calculation for a multi-unit shop places the value added per employee at \$15,364 (i.e.,  $\$27,934 \times 0.55$ ). If one assumes that single-unit and multi-unit firms each enjoy an equivalent level of gross profit margins (not necessarily a valid assumption), then it would appear that multi-unit firms achieve a higher level of industry productivity per employee than do their single-unit counterparts.

FTD [1982b] surveyed 975 firms in 1981. Average sales were about \$150,000, while total assets averaged \$38,887. If one applies the 55 percent value added that was previously used for 1977 to these data, then the value added per firm would be \$82,500 (i.e.,  $\$150,000 \times 0.55$ ). The value added per \$1,000 of assets would be \$2,122 (i.e.,  $\$82,500 \div 38.887$ ).

The Robert Morris Associates [1981] '81 Annual Statement Studies compared the balance sheets of only 67 retail firms with fiscal years ending between June 30, 1980 and March 31, 1981. These firms were obviously much larger than those surveyed by FTD as their net sales

averaged about \$2,753,731 and total assets averaged \$988,687. Examining only the 58 firms with sales of less than \$1 million, net sales averaged \$853,052 and total assets averaged \$270,828. If one applies the previously used 55 percent value added figure to these data (which overestimates the 48 percent (and 50 percent for firms with sales less than \$1 million) value added figure that the Robert Morris Associates found for their own data), then the value added per firm would be \$1,514,552 (i.e.,  $\$2,753,731 \times 0.55$ ) for all firms or \$469,179 (i.e.,  $\$853,052 \times 0.55$ ) for firms with sales of \$1 million or less. The values added per \$1,000 of assets would be \$1,532 (i.e.,  $\$1,514,522 \div 988.687$ ) for all firms or \$1,732 (i.e.,  $\$469,179 \div 270.828$ ) for firms with sales less than \$1 million. It is interesting to note that, even though the firms from the Robert Morris Associates data averaged much higher sales and assets figures than those of the FTD survey, the values added per \$1,000 assets are somewhat comparable. The surveyed values added from the Annual Statement Studies data for the five fiscal years ending 1977 through 1981 (as opposed to the assumed 55 percent of sales) ranged from \$1,029,702 to \$1,316,283 per firm surveyed (48 to 54 percent) in any year. The average value added per \$1,000 assets varied from \$942 to \$1,318 [Robert Morris Associates, 1981].

Wholesale. The Wholesale Florists and Florist Suppliers of America's (WF&FSA) [1982] 1981 Operating Ratio Report suggests average sales per employee were \$113,400 for 1981; WF&FSA also suggests that the gross profit margins on all goods for those surveyed was 30.3 percent. Hence, the value added per employee per year would be about \$34,360.

The 1977 Census of Wholesale Trade [U.S. Bureau of the Census, 1979] yields slightly different results when combined with the gross profit margins used for the wholesale level of the industry in the previous section of this chapter. The Census reports \$1,954,163,000 in sales with total employment at 24,282 persons. This implies sales of about \$80,478 per employee. Using the 25 percent to 30 percent range of value added previously employed, the value added per employee would fall between \$20,120 and \$24,143.

In its report, WF&FSA [1982] noted that its (surveyed) members probably are more profitable than the industry as a whole. This alone might explain some of the variation in results. If one considers the difference in dates and the inflationary pressures between 1977 and 1981 (the producer price index rose 51 percent during these years), the difference in the value added as calculated from the various data sources becomes less a matter for concern.

The '81 Annual Statement Studies of the Robert Morris Associates [1981] reviewed the balance sheets of 87 wholesale florist firms for 1981. Average net sales of about \$4,635,759 and average total assets of about \$1,867,805 were found for firms with fiscal years ending between June 30, 1980 and March 31, 1981. (Again, these firms are much larger than average for the industry as a whole. The average sales for firms in the 1977 Census of Wholesale Trade [U.S. Bureau of the Census, 1979] was about \$794,698 per year. However, WF&FSA [1982] reports only about 6 percent of the outlets it surveyed with sales greater than \$3.5 million per year.) If it is assumed that the 25 percent to 30 percent range for value added can be applied to the Robert Morris Associates [1981] data (noting that this range underestimates the findings in the Robert Morris

data), the average value added per \$1,000 of assets is assumed to range between about \$620 (i.e.,  $(\$4,635,759 \times 0.25) \div 1,867.805$ ) and \$745 (i.e.,  $(\$4,635,759 \times 0.30) \div 1,867.805$ ) per firm. If one were to use the Robert Morris Associates [1981] data for the five fiscal years ending 1977-81 and employ the values added found in the Annual Statement Studies (rather than the 25 percent to 30 percent range), then the value added (for any year) per \$1,000 assets falls between about \$693 and \$888.

Grower level. The value added at the grower level, as discussed previously, is probably only surpassed by that at the retail level. Yet, because of the vast differences in crops, in growers and in methodologies used, calculating a meaningful value added per employee or per \$1,000 assets is an arduous task. Yet, the 1979 Census of Horticultural Specialties [U.S. Bureau of the Census, 1982] does provide some data which may offer clues as to value added per employee or per \$1,000 assets. A basic assumption, also used previously but not noted as such, is that the entire farm value of the crop is considered the grower's value added. (An alternative approach, though not used here, may be to deduct costs of cuttings or plants from the farm value. However, due to the great variation that such a methodology would entail, e.g., chrysanthemum growers could easily deduct the cost of the cutting used for each flower produced, but rose growers would have to deduct the cost of a plant from the production of many years, this approach is not employed here.)

The 1979 Census of Horticultural Specialties [U.S. Bureau of the Census, 1982] notes that 26,852 persons were employed for at least 150

days in the production of potted flowering plants and/or cut flowers in 1979.

Another 25,751 persons were employed for less than 150 days; however, these averaged less than \$1,400 in wages each (approximately 17 percent of the amount of a full-time worker) [U.S. Bureau of the Census, Census of Horticultural Specialties, 1982]. Hence, these 25,751 persons were each, in payroll terms, equivalent to 0.17 "full-time" workers, or a total of only about 4,373 equivalent workers working at least 150 days or more.

Finally, there were 3,458 persons working in potted flowering plant and/or cut flower production as unpaid family labor [U.S. Bureau of the Census, Census of Horticultural Specialties, 1982]. Each is considered (an assumption) a full-time employee here.

Thus, it will be assumed that a total of about 34,683 persons (i.e.,  $26,852 + 4,374 + 3,458$ ) were employed full-time in potted flowering plant and/or cut flower production in 1979. Total sales, or in this case assumed value added by these firms, were \$867,021,000 [U.S. Bureau of the Census, Census of Horticultural Specialties, 1982]. Hence, value added per full-time employee for those involved in potted flowering plant and/or cut flower production was \$24,998 in 1979.

The 1979 Census of Horticultural Specialties [U.S. Bureau of the Census, 1982] also indicates that producers of potted flowering plants and/or cut flowers had land and buildings valued at \$1,483,907,000 and machinery and equipment valued at \$164,533,000; hence, these firms had identified fixed assets valued at \$1,648,440,000. Sales (i.e., value added) per \$1,000 of fixed assets then were about \$526 in 1979 at the

grower level for producers of potted flowering plants and/or cut flowers.

Value added per employee and per \$1,000 assets--summary. If the assumptions that have been made can be accepted and the inferences made can be considered representative of the entire industry, some conclusions are in order.

On a per employee basis, the value added at the wholesale level for 1981 far exceeds the 1979 level of the value added at the grower level. As a matter of fact, the value added at wholesale in 1977 was almost as high as that achieved at the grower level in 1979. Both the grower and the wholesaler, however, add much more value to the final product than does the retailer on a per employee basis. (This might be expected of a largely service oriented retail sector.)

If one compares the value added per \$1,000 assets between the various subsector levels, noting that only data on fixed assets are available at the grower level, one finds the retailer achieving the highest value added level per \$1,000 assets. The grower trails the subsector even when the divisor contains only his fixed assets; depending on the scenario used, the average retailer may have as much as four times the value added per \$1,000 asset level as does the average grower. This is probably to be expected considering the tremendous investments needed at the grower level, compared with either the retail or wholesale levels of the subsector.

In summary, these results suggest that the grower and the retailer appear at opposite ends of the value added productivity spectrum. Both the retail and the grower levels contribute more to the total value

added than does the wholesale segment of the industry. On a per employee basis, however, the grower and the wholesaler contribute the most value added while the retailer contributes the least. Based on value added per \$1,000 of assets, the retailer leads the industry, followed by the wholesaler and the grower.

#### Profits as a Percent of Sales, Assets and Net Worth

Profitability is, of course, the key to the long-term survival of a business or an industry. The health of an industry can also be gauged in terms of profits as they relate to sales, assets and net worth. Various data provide clues to the profitability indicators.

Retail. FTD [1982c] data suggest that the net profit (loss) of nearly 800 firms surveyed in 1977-78 varied from 17.7 percent to -9.8 percent of sales. The median net profit figure for these firms was 3.6 percent of sales. Data from a survey of 975 shops in 1981 revealed average profits of 3.2 percent of sales [FTD, 1982b]. The Annual Statement Studies of the Robert Morris Associates [1981] confirm this as a realistic realm; the average profit as a percentage of sales for firms surveyed during the years 1976-77 to 1980-81 varied from a low of 1.7 percent in 1980-81 to a high of 4.5 percent in 1979-80. Over these years, these figures themselves averaged to the same 3.6 percent of sales suggested by the 1977-78 FTD data.

The data from the Robert Morris Associates [1981] and FTD's 1981 survey of florist shops [1982b] are helpful in determining the profits as a percentage of assets and profits as a percentage of net worth. The firms in the former survey are much larger than those in the



latter survey. Furthermore, the FTD averages are based on a survey of 975 balance sheets, while the Robert Morris Associates data are based on averages from 67 firms. Neither survey is necessarily indicative of the industry as a whole.

FTD [1982b] data suggest that, for 975 shops surveyed, profits as a percentage of assets were 12.3 percent in 1981. Similarly, profits as a percentage of net worth averaged 39.2 percent. Conversely, manipulating the data of the Robert Morris Associates [1981] survey of 67 firms (using standard accounting relationships) generated figures of 4.69 percent and 12.47 percent, respectively, for implied profits as a percentage of assets and profits as a percentage of net worth.

Examining the Robert Morris Associates [1981] data for the fiscal years 1976-77 through 1980-81 provide what are perhaps more general results. These data reveal that profits as a percentage of total assets for retailers varied from an average 4.69 percent in 1980-81 to 10.20 percent in 1979-80. The average of the five yearly figures for the various fiscal periods is 7.92 percent. Profits as a percentage of net worth vary from 12.47 percent in 1980-81 to 26.91 percent in 1979-80; the overall average for the five years 1976-77 through 1980-81 for profits as a percentage of net worth is 21.30 percent.

In summary, traditional retailers appear to average profits between 3.2 percent and 3.6 percent of sales. From the various sources, average annual profits were found to range from 4.7 percent to 12.3 percent of assets and from 12.5 percent to 39.2 percent of net worth.

There are no data reporting on mass market profits in this regard. One can only assume that mass marketers are probably pleased with the profitability of cut flowers relative to their other offerings; Kress

et al. [1983] found over 56 percent of those surveyed in 1982 were either "well satisfied" or "satisfied" with their cut flower experiences, while only 10.3 percent claimed disappointment and another 33.6 percent claimed mixed feelings. This is an improvement over the results of a 1978 survey in which just over 37 percent of those surveyed claimed to be "well satisfied" or "satisfied" with their cut flower mass market ventures, while 19.8 percent voiced dissatisfaction [Kress, 1979]. Furthermore, in the 1982 survey over 55 percent of the firms surveyed said they planned for great (30.7 percent) or slight (24.6 percent) increases in their commitments to cut flowers [Kress et al., 1983]. This was up from just about 46 percent of the firms surveyed in 1978 which had planned increased involvement with cut flowers [Kress, 1979].

Wholesale. Other data from the Wholesale Florists and Florist Suppliers of America (WF&FSA) [1982] and the Robert Morris Associates [1981] provide insight into the wholesale florist industry. The WF&FSA found that the average profit of the 204 members surveyed in 1981 was 4.8 percent of sales. The WF&FSA did acknowledge that the gross profit margins of its members were probably higher than for the industry as a whole, however [WF&FSA, 1982]. In comparison, the Robert Morris Associates [1981] annual survey of selected wholesale florists revealed profits ranging from 2.3 percent of sales (1978-79) to 4.2 percent of sales (1976-77) for the five fiscal periods, 1976-77 through 1980-81; an average profit figure over the period was 3.2 percent of sales for the wholesale level.

Robert Morris Associates [1981] data show that, for the five fiscal periods 1976-77 through 1980-81, average profit at the wholesale level as a percentage of total assets ranged from 5.5 percent to 10.7 percent. The average figure over the five years was 7.8 percent. Average profit as a percentage of net worth ranged over the five periods (1976-77 through 1980-81) from 13.6 percent to 22.1 percent; the average figure over the period was 17.6 percent of net worth. The WF&FSA [1982] reported average returns on investment in inventory and receivables for members surveyed in 1981; this figure was 29.8 percent for all members but a higher 45.1 percent for those primarily involved in perishables only. There was a broad range of this return as firms with less than \$1 million in sales only generated 12.8 percent "return on investment" while those with greater than \$2 million in sales had 38.8 percent "return on investment."

If these data are assumed to be reflective of the entire wholesale florist level of the industry, then annual profits run about 4 percent of sales and equal about 8 percent of assets. Profits also average approximately 18 percent of net worth. Return on investment in (only) inventory and receivables is naturally higher and may total as much as 30 percent. Annual profits represent a slightly higher share of sales at the wholesale level than at the retail level. However, profits as a percentage of assets and as a percentage of net worth are lower at the wholesale level than at the retail level of the industry.

Grower. Unfortunately, data on the profitability of the growing segment is not as readily available. However, in 1977 the U.S. International Trade Commission (USITC) surveyed an estimated 7.9 percent of

fresh cut flower growers in conjunction with an investigation concerning imports. Profit and loss statements were analyzed for 52 U.S. growers for the years 1972-76. For these 52 growers, average net profit as a percentage of sales (before taxes and officers' salaries) during the five year period ranged from a low of 4.9 percent in 1974 to a high of 15.0 percent in 1972. The average of these profit figures (before taxes and officers' salaries) for the five year period was 9.5 percent of sales [Burket, 1977].

No sources exist for directly calculating the profit as a percentage of assets or as a percentage of net worth. Yet, if one were to take the average profit figure from all firms in the USITC data over the five year period (\$42,900 per year) [Burket, 1977], and divide it by data obtained from the 1979 Census of Horticultural Specialties [U.S. Bureau of the Census, 1982], the profits as a percentage of fixed assets can be estimated, although rather crudely. (Of course, one then assumes that 1979 data represent average fixed asset levels, which are theoretically unchanging.) The average value of land and buildings of 6,486 potted flowering plant and cut flower growers in the 1979 Census was about \$228,786. Average value for machinery and equipment for the same growers was approximately \$25,367. Hence, fixed assets totalled about \$254,154 in 1979 [U.S. Bureau of the Census, Census of Horticultural Specialties, 1982]. Hence, the crude approximation for profits (before taxes and officers' salaries) as a percentage of fixed assets for the average grower during an average year is 16.9 percent.

Summary. It should be emphasized that the data are not directly comparable between the levels of the subsector. Different years,

sources, accounting methods and firms come into play. Furthermore, data are not necessarily representative of firms in the industry as a whole.

Nevertheless, profits as a percentage of sales were found to average between 3.2 percent and 3.6 percent at the traditional retail level, to run about 4 percent at the wholesale level and to tally approximately 9.5 percent at the grower level, for the data examined. Traditional retailers had profits as a percentage of assets ranging from 4.7 percent to 12.3 percent and profits as a percentage of net worth varying from 12.5 percent to 39.2 percent. At the wholesale level of the industry, data showed profits averaging about 8 percent of assets and 18 percent of net worth. Return on investment in (only) inventory and receivables at the wholesale level may run as high as 30 percent, however. At the grower level, only a crude approximation for profits as a percentage of fixed assets was attainable; this was 16.9 percent. Data were unavailable for determining profits as a percentage of net worth at the grower level.

#### Losses in the Subsector

As cut flowers are perishable, the subsector does experience losses. Such losses, however, are not solely confined to product shrink. Deterioration sometimes goes unnoticed and results in depriving the end consumer of pleasure which might be considered due in the expected "consumer life" of the product. Losses also occasionally occur from operators' intentional failure to market product as a reaction to low prices, etc. Delayed marketing is also a problem. Other losses occur due to underutilization of resources, and these are perhaps the largest losses experienced in the subsector.

### Product Shrink and Deterioration

One of the persons attending a May 1982 Floral Industry Strategy Meeting held by the Society of American Florists at the Brookings Institution was quoted as saying, "The garbage may be the biggest consumer of floral products" [Society of American Florists, 1982a]. Whether the problem of product shrink has truly become one of these proportions is hard to tell. Retail sales as reported by the 1977 Census of Retail Trade [U.S. Bureau of the Census, 1978] does not allow for both the reported gross profit margins and all of the sales reported by the 1977 Census of Wholesale Trade [U.S. Bureau of the Census, 1979] without there also being considerable shrink in the marketplace. In his book, Greenhouse Operation and Management, Paul Nelson [1978, p. 10] cites an Ohio State University-sponsored National Floriculture Conference on Commodity Handling (1976) at which it was estimated that 5 percent of fresh flower crops are not even harvested. Another 20 percent of the product that is harvested, it was estimated, ends up unsuitable for final sale because of handling, storage or other problems in the market channel. At retail, the only known survey (to this author) comes from the Kress et al. [1983] study of the supermarket industry. Almost 43 percent of the supermarket firms surveyed reported shrink of 6 to 10 percent, while 31 percent reported shrink of 5 percent or less, 10.7 percent reported shrink of 11 to 15 percent and 15.5 percent reported shrink of over 15 percent. Traditional retailers probably experienced less shrink than mass marketers, as many of the latter group have yet to invest in refrigeration or other shrink reducing methodologies or in training.

Much has been written about product deterioration, but most reports suggest that industry operators often fail to take advantage of the known methodologies for prolonging cut flower life. For example, a carnation treated with silver thiosulfate is known to have increased longevity [Reid et al., 1980]. Yet, tremendous doubt has arisen as to whether the use of treated carnations will be either uniform or to the benefit of consumers rather than the various businesses in the marketing channel [Kress, 1981; Miller, 1981].

Hypobaric storage provides another example of technology which has been developed to decrease the rate of flower deterioration. This technology will probably benefit mostly the market channel innovators (at first) with long-term storage capabilities. The consumer may benefit with relatively lower prices once the industry uniformly adopts this methodology. Its expense, however, has kept its use completely experimental at this point [Murphy, 1981; Gillette, 1981a].

A final example of how industry has failed to adopt existing technology and can, therefore, be at least partly blamed for deteriorating product is its frequent failure in its use of preservatives. Preservatives containing 8-hydroxyquinoline citrate, sugar and a bactericide or similar combinations have been marketed for years. Yet, many florists still fail to use them or to promote their use by consumers (Appendix A).

Chapter IX will address issues of post-harvest physiology in greater detail.

### Intentional Non-Marketing and Delayed Marketing of Products

There are times when operators intentionally do not market product. Such intentional non-marketing of products affects market prices, as a reduced quantity supplied will drive market prices up. However, non-marketing often occurs as a result of already low prices; market prices may not warrant spending money on the labor needed to harvest flowers. Sometimes the nature of greenhouse operations may necessitate harvesting a crop whether or not it is to be marketed. Non-marketing may also result from already poor demand irrespective of price, e.g., the slow summer period when perennial crops such as roses continue to produce. Producing quality of a crop other than what the market is favoring may also result in non-marketing.

All of the reasons which result in non-marketed crops cause losses (or at least the loss of potential gains under other circumstances) for the subsector. However, marketing may also have a time-frame reference, i.e., crops may have their marketing delayed. Such delays may also cause losses, as described in the last section, from product shrink and deterioration. Again, those near the end of the market channel, e.g., retailers and consumers, may be the ones most likely to suffer these particular losses from reduced longevity.

The earlier cited comment from Nelson's [1978, p. 10] book suggested that 5 percent of fresh flower crops never get harvested. No doubt, part of this 5 percent is related to quality considerations. If some product does not compare favorably with most of the available product and prices are weak, harvesting may not be economically justified.



Much of this unharvested produce, however, may be the result of weak demand. In an industry where peaks and valleys often occur in prices and demand (Chapter V), periods frequently exist with product surpluses. Extraordinarily weak demand periods often follow the holiday peaks, as infrequent purchasers often need extra time to "recover" from their floral indulgences. Instances have often been reported of importers telexing their foreign growers to cancel overseas shipments or of wholesalers refusing their standing orders immediately following holidays (Appendix A). During such periods, non-harvest may be warranted. Growers who have "missed the holidays" because of poor crop timing may be especially hard hit during such weak demand periods.

Non-marketing of flowers may also plague growers of certain species. Periods of abnormally cold temperatures during Florida winters, for instance, may slow the maturation of gladioli; when temperatures return to normal ranges, an extra flush of blooms may appear. In these cases, some of the product may not even get harvested, either due to labor constraints or to the realization by operators that not all of the added produce can successfully be marketed. During this author's travels in California, many fields of Marguerite daisies were seen filled with blossoms; no attempts were being made to harvest this production due to the reported poor market conditions at the time. Still, as Nelson [1978] suggested, the amounts affected are probably minimal.

Delayed marketing is also a form of non-marketing which may result in losses in the subsector. Growers have reported withholding portions of their daily harvests in rotation in the days or weeks prior to holiday price peaks in an effort to build reserves. Similar rotation

has been reported by wholesalers in some cases, especially for dry-packed flowers. Such delayed marketing tactics, reported to last for as long as two weeks, may be an attempt by growers and wholesalers to satisfy the heavier demands associated with holidays. Taking advantage of or attempting to beat the rising prices are equally good motives for such actions. Retailers, too, may be guilty of trying to beat the price peaks by intentorying holiday merchandise a day or two earlier than normal (Appendix A). One of the biggest incentives for the as yet commercially unemployed hypobaric storage of flowers is that the flowers may be first stored during periods of low prices and weak demand for use during periods of tighter market supply in the future [Gillette, 1981a]. Until such time that hypobaric storage makes the holding of flowers more efficient physiologically, however, one can only conclude that at the times of the year when demand is highest, some less than optimum product does get marketed.

Rotating harvests for building holiday reserves notwithstanding, operators do not always handle merchandise correctly, resulting in product that gets sold in less than optimum condition. If product even makes it all the way through the market channel to the consumer, then the consumer is likely to end up with produce of less-than-normal retail longevity. This may result in customer losses in the long term as well as product shrink in the short term.

#### Resource Underutilization

Probably the biggest losses in the subsector occur because of underutilization of resources. The seasonal nature of the industry provides many periods of the year where all segments operate at below

their maximum capabilities. Such underutilization occurs among many resources, but is probably most noticeable in terms of greenhouse and field underutilization at the grower level and labor and facility underutilization at the wholesale and retail levels.

A good portion of the underutilization occurring must be blamed on the uneven demand patterns previously discussed. Summer represents a season with generally reduced cut flower demand, and there are no floral holidays providing even minor catalysts for sales. As a result, many greenhouses lie partially or completely vacant during the summer months. Employees are often seen catching up on maintenance instead of tending crops. Employees may get laid-off during the summer at some operations. Summer's lull allows other operations the time needed to prune or to remove older multi-crop plants such as roses and carnations, catch up on greenhouse maintenance and the like.

Holiday peaks also affect resource utilization. The timing procedures used for achieving maximum production for a particular holiday often force growers to make choices on facility use and/or on when normal output levels can be reinstituted. For example, aiming for production levels for Valentine's Day presents the rose grower with reduced levels for several weeks. Another example involves the grower who produces a potted plant crop of Easter lilies; he may not be able to produce a crop for Mother's Day, especially if Easter falls late in the spring. If Easter comes early, a grower may be faced with a choice between growing for Valentine's Day or for Easter. Growers who ignore holiday peaks and maintain stable production levels can, of course, avoid at least some of the resource underutilization problems. However, the grower who tries to "hit the holidays" may find he has

surplus labor, facilities and other resources during the holiday interludes.

The weather may also affect production and, hence, resource utilization. Florida's summers are not conducive to outdoor production, while the warmer summer weather in other parts of the country allows for less expensive cut flower production in the open. Hence, Florida stops production of gladioli and chrysanthemums in the summer and the land lies fallow. Conversely, winter weather in the more northern climes causes land to remain unproductive during much of the year. Greenhouses or other structures with less than adequate temperature control may also remain underutilized during harsh winter weather or during warm summer months.

At the retail and wholesale levels of the industry, resource underutilization usually revolves around labor and facilities. Operations which are structured to handle the peak business times of the year will often experience underutilization during off-peak periods. Hence, labor, refrigerators, delivery vans and other space and equipment may be idle during parts of the year. While the hiring of temporary or part-time labor and equipment rental may allow for the adequate handling of orders during top business periods and thus reduce possible underutilization during lulls, it is difficult to make similar arrangements for floral refrigerators, storage or display space, etc. Hence, resource underutilization occurs during slow periods so that the businesses will be able to satisfy demand during peak seasons.

Finally, the small business nature of the cut flower industry, some may argue, leaves cash an underutilized resource much of the time. Firms with less than adequate business experience or training may often

be guilty of misusing funds or of using their resources to less than full advantage. Leaving large amounts of cash in non-interest bearing accounts, allowing accounts receivables to accumulate, not taking advantage of cash discounts or time extensions for bill paying and the like, mismanaging inventories or costs, etc., are all ways in which cash can be an underutilized resource.

#### Transaction Costs at Different Stages and With Different Coordinating Mechanisms

Chapter VI noted the fact that most of this industry's coordinating mechanisms are of the informal type, i.e., informal relative to those mechanisms which might be found in other agricultural subsectors. The cut flower industry has no mechanisms involving support prices or futures contracts. Yet, the cut flower industry does have its own set of coordinating mechanisms, and as outlined in Chapter VI, these revolve around exchange arrangements (normal purchases, i.e., cash for goods), information systems and collective organizations (cooperatives and trade associations).

Some of these coordinating mechanisms involve costs. These transaction costs will be outlined here. Most of these costs are usually small parts of the total flower bill, and they can usually be easily justified. However, in that some of the transaction arrangements involve support arrangements which are somewhat limited in scope, the potential for some unfair competition will be noted.

Most of the sales in the industry involve the telephone, although telex or telegraphs may be used in some instances, especially for transactions pertaining to overseas parties. Computer terminals (also

linked by telephone lines) are emerging as a new communication methodology. Growers regularly contact shippers and wholesalers by telephone. These, in turn, contact their wholesale and retail clients regularly, either by telephone or in person. Even about three-fourths of all retail sales are made by telephone to customers [Havis, 1967]. While the extent of the telephone's involvement stresses the informal nature of the transactions in this subsector, it also underlines the susceptibility of the industry should something happen to alter the current workings of these communication processes. New competition among long distance communication companies may also allow for an altered cost pattern for such dealings.

Shipping costs represent another area which could have a big effect on the industry's transactions if transportation processes were substantially altered. As much of the domestic cut flower production is centered in California and Florida, and imports largely enter the U.S. via Miami, Florida, shipping is important to the industry for product distribution. In some cases, shipping costs (including freight, box and handling costs) to the wholesaler represent a notable portion of the wholesale price, whether one is speaking of air freight for imported product or truck, bus, air or rail freight for domestically shipped produce. A Society of American Florists [1982b] survey found that the average wholesaler alone spent almost \$90,000 for transportation in 1980. Of this amount, airlines received about \$47,000 and trucking firms accounted for \$38,500. Bus service at the wholesale level accounted for \$3,100 according to the survey results, while Amtrak accounted for \$350 in transportation services for the average wholesaler. The U.S. Postal Service, Purolator, Federal Express, United

Parcel Service and others provided the services for the remaining shipping expenditures.

Significant costs are also incurred at the retail level for transactions involving customer sales. Telephones are used to place about 75 percent of customer orders [Havis, 1967]. Delivery, now involving a separate charge in about 83 percent of the florist shops in the U.S., plays a role in almost three-fourths of florists' orders [FTD, 1982c]. These both can be considered transaction costs at retail. Although telephone costs may be minimal, delivery costs frequently run several dollars per order; frequently, the latter are often not completely covered by the delivery charge paid by the customer.

Other charges may also be incurred for certain types of orders. Wire service orders, for instance, often involve a transmission charge to cover the telephone, telegraph and/or computer transmission of orders. Customers may also be asked to pay a service charge on wire service or other orders; this amount may be a small sum imposed by the florist for covering the added paper work involved in handling wire service orders. In the case of weddings, a service charge may be considered as florists try to recoup added labor costs, rental costs, etc., which may be incurred in the servicing of some weddings.

Wire service orders, because of the methodology used in dividing the sales, can also involve a transaction charge. With FTD, for example, the originating florist is allowed to keep 20 percent of the sales value as a commission. The receiving florist is charged 5 percent of the full value of the order as a marketing cost (for advertising and clearinghouse charges). The incoming order is still expected to be filled at 100 percent of the face value, even though only 75 percent of

the assessment is available to the filling florist. The 25 percent of the order's value that the filling florist never sees could be considered a transaction charge. Similar arrangements are common among all of the wire services.

State sales taxes are also applied in most cases for retail sales.

Transaction costs, as can be seen, vary with the level of the industry. Transportation and communication services are usually involved at all levels, although other service charges are sometimes also added. These transaction charges often can be substantial. Even at retail, it is not unusual for a wire service order's transmission charge, delivery charge, service charge and sales tax charge to collectively add as much as one-fourth more to the consumer's final cost of a flower arrangement in some locales.

#### Progressiveness at Each Stage

Discussion of the progressiveness of the cut flower industry will group achievements into three areas. First, product achievements relating to cut flowers as inputs will be reviewed; the focus will be on breeding, propagation and application of cut flowers to the industry. Secondly, production processes, including production of cut flowers and all of the processes involved in marketing the product in consumer form, will be outlined. Finally, the innovations in the organization and coordination of various portions of the subsector will be examined.

#### Product: Cut Flowers as Inputs

Cut flower varieties are continually being developed. The breeding work strives toward different goals, as some breeders attempt to find



totally new and different varieties, while others aim for improved disease resistance among already established types. Although such is not always the case, it is hoped that breeders consider marketability, both in terms of consumer appeal and in terms of a product's durability for handling through the distribution system, when planning objectives for new cultivars. Longevity after cutting is also a worthy aim.

Propagation methods have changed in the cut flower industry as well. Modern hormones have speeded the rooting of cuttings in many cases. Advances in breeding have been combined with findings in new seed propagation techniques to allow seed propagation sometimes to replace a previously required use of cuttings. (Cuttings had formerly been reserved for the propagation of some species due to the longer length of time required for seedlings to achieve blooming size.) Some firms even specialize in custom seed propagation for others.

Another method of plant propagation which has been a great asset to the cut flower industry is that of tissue culture. Tissue culture has been widely adopted for the production of aseptic cuttings. Genetically identical plants are produced by stripping cuttings down to their apical meristems and propagating them in agar solutions. This has become a very important methodology in highly disease susceptible species, e.g., chrysanthemums. Tissue culture has also been an asset to the plant breeder, as identical replicas of plants can be quickly generated by using small portions of plants to create complete specimens.

A final area of product progressiveness concerns the application of various species. Today, more and more species are being added to the list of cut flower varieties readily available to florists. In some

cases, the list is being expanded by the new adaptation of flowering plants to commercial cut flower production. (Sometimes imported supplies have accounted for the availability.) Recently introduced species to the U.S. market would have to include alstroemeria, gerberas and others.

Other applications, however, come from older species. Some species were disgarded by florists in favor of what have today become the "bread-and-butter" flowers, i.e., roses, carnations, chrysanthemums, roses and gladioli. A resurgence of some of the minor species has occurred, as consumers look for varieties with which they are not themselves familiar. Asters, some varieties of lilies, several garden flowers, e.g., zinnias, peonies and dahlias, and orchids (when sold in a spray rather than the corsage) provide examples of "re-introductions." In many cases, such introductions are made possible as a result of research which has made cut flower production of minor species more reliable and, hence, seem less risky in the eyes of growers when compared with the production of the major species.

#### Production Process Through the Market Channel

The task of getting cut flowers to the consumer has been altered greatly over the last several decades as progress has penetrated every level of the subsector. Progressiveness has altered the product itself, as discussed above, but it has also changed many of the methodologies of production in the greenhouse and the production processes involved throughout the market channel. Even the production of the final flower arrangement has been somewhat modified. This section discusses

progressiveness throughout the grower to retailer portions of the market channel.

The methods of production have become a true science as seed companies, Land Grant universities, private and other government breeders and investigators have researched and published exacting cultural requirements for most of the major species. Such requirements are needed for efficient crop production and, in some cases, for proper timing of cut flower crops. (Such timing is needed so that production can be realized by specific target dates, e.g., for holidays.) Research on photoperiodism continues to uncover relationships so that more and more crops can be accurately timed. The research on cultural requirements takes on added meaning as producers look for less resource-expensive methodologies to reduce energy, water, fertilizer, labor or other input costs. Yet, current methods of production have evolved substantially from those of only a few decades ago.

Cultural requirements are not the only advancements to occur in the greenhouse as some progress has also been realized in greenhouse mechanization. Chapter VI outlined many of the changes that have been adopted by floriculture and pointed out that not all are applicable to cut flower production. Still, many of the processes have been readily adopted, especially in the area of energy conservation. Mechanized systems have also been developed to take over the tedious hours once spent pulling black cloths for photoperiodic responsive species. Automatic watering systems can now be programmed to apply water almost scientifically when plants show stress. Even the use of rolling benches, a method of greenhouse space conservation originally

practiced only by potted plant and bedding plant producers, has been reported by some cut flower growers [Hughes, 1982].

Transportation improvements have certainly affected the cut flower industry over the last several decades. Modern rail, truck and air transportation has revolutionized the cut flower industry as growers are now able to grow in areas with climates more conducive to cut flower production and then ship their produce to markets efficiently. Lower air freight rates have led to greater overseas production as well, resulting in an ever increasing tide of cut flower imports. Changing rate structures between the airlines and the truckers, as well as competitive landing fees and the availability of facilities and associated services between various airports and cities, often dictate the proportions of flowers travelling by various means and/or along various routes.

One of the newest processes associated with transportation services relates to post-harvest physiology. Precooling of flowers before shipment has been utilized for the removal of field and airplane runway heat, especially for flowers destined to become part of a consolidated shipment of a common carrier. The methodology improves the efficiency of refrigerated transport and, in turn, helps to prolong cut flower life.

Another area of great improvement in the market channel has to do with storage and life-prolonging methods of handling cut flowers. With the transformation of the industry from one dominated by local growers serving local retailers to one of distant growers shipping in their high quality produce, the need for improved care and handling became apparent. Floral preservatives represent just one development. Recent introductions of preservative related materials now help flowers to last

for weeks (e.g., silver thiosulfate). Methods have been introduced which permit the dry storage of flowers at low temperatures and high humidity; this has facilitated long distance shipping, as well as long-term storage, helpful for instance, in the weeks preceding holidays. Tools have recently been introduced which facilitate the cutting of flower stems under water; this method has also been found helpful in lengthening the post-harvest life of cut flowers as it helps to prevent air bubbles from clogging flower stems.

Another tool for post-harvest care is hypobaric storage. Although not yet economically feasible for flower use, hypobaric storage is a methodology using highly humidified air and low temperatures and pressure for controlled environment storage. Cut flowers stored dry (i.e., packed in boxes without use of water) in such a way can be maintained in a salable state for several months.

Advancements in production and greenhouse mechanization, transportation and post-harvest care and handling techniques have combined to improve the cut flower industry. These production processes, when used correctly throughout the market channel, help to provide the retailer with a product far better than that of a few decades ago.

Unfortunately, the retailer has not seen an equivalent number of innovations. Although refrigerated coolers and electronic cash registers have eased the task faced by all retailers, these improvements came as adaptations from other industries, rather than as innovations to solve industry problems or to help operators remain competitive. In this regard, the computer terminals being touted by various wire services, although also adapted from other technologies, are more comparable with the innovations found at other levels of the industry;

these have been advertised as giving a member florist a competitive edge over those who do not adopt.

As the traditional retailer serves basically a service function involving flower arranging, delivery, credit, etc., it is hard to develop much in the way of mechanization, new methods, etc.; these possibilities or realities just do not exist in great numbers. However, florists have developed new styles, accessories and a few techniques new to flower arranging. New floral foams or shredded foams have been combined in some cases with modern styles of containers to modernize the "mechanics" of the flower arrangement. Some florists now use wines and champagnes, balloons, and other accessories to create "buds and bubble bouquets" or arrangements which leave the recipient with a nice memento after the flowers have faded. Wires attached to a flower's stem and floral picks have also aided the florist in arranging by adding support to the flowers. One sometimes can find foliage stripping machines or tools in florist shops, which are most often used to remove leaves and thorns from roses.

Probably the biggest innovation at the retail level has been what some traditional florists consider their biggest nemesis, i.e., the mass marketer. Mass marketers, looking for non-food items to boost their profitability with higher margins, turned to many products in recent years; flowers have been one such product [Miller, 1977]. For the most part, the mass marketer has focused on floricultural items other than cut flowers [Kress, 1979]. When cut flowers have entered the product mix, however, these have usually been in the unarranged format (at least in initial stages) (Appendix A).

### Innovations in the Organization and Coordination of Portions of the Subsector

As prominent as any area of industry progressiveness has been the group of alterations seen in the organization and coordination of the subsector. Chapter VI focused on subsector organization, and it is this organization which has itself been altered over recent years, thus representing a major area of progression. Further, several opportunities for improving coordination have been developed by the wire services or other segments of the industry. These will be discussed below.

The wire services have in recent years been responsible for promoting that item which has the potential for making perhaps the biggest alteration in the way the industry is organized and coordinated--the computer terminal. Computer terminals are being promoted as an item that allows retail florists to handle wire service orders quickly, to communicate with the wire service headquarters on matters both related and unrelated to the clearinghouse procedures, to place orders for wire service-sponsored merchandise, to clear credit card orders and to handle computer billing of orders. The potential for such a communications device may be almost endless as florists may one day even be able to order fresh flowers routinely from wholesalers, shippers or growers with such a device.

The wire services themselves have been responsible for much change in the industry. In recent years, FTD, for example, has conducted three censuses of members. These censuses have enabled florists, wire services and other researchers to get one of the best views of the florist industry. The wire services also operate research and education departments which, among other things, provide workshops to members (on

a regional basis) designed to improve business management practices, floral designing and other practices essential to successful flower shop retailing. In recent years, wire services have also begun to enter the hard goods business, although much of this has been related to seasonal bouquets that are being nationally advertised. Still, one of the main concerns of the wire services must be considered the successful operation of the clearinghouse mechanisms whereby orders are properly handled and appropriate florists are credited and billed for their long-distance transactions. These clearinghouse operations do, however, enable the wire services to remain a formidable force in the flower industry in matters relating to the industry's course, the effects of governmental decisions, advertising, education and research and dealing with the public.

Another sector experiencing shifts in the organization and coordination of the industry must be considered the large terminal markets. Although it may be suggested that they have not changed or are in a decline, these markets, even by their occasional stagnation, have caused many modifications in the industry. The Los Angeles and Boston markets have built new structures in recent years which must be considered statements about future hopes and/or expectations in these two cities, if nothing else. In Long Island, New York, and San Diego, California, operators have recently formed cooperatives, set up to operate Dutch style flower auctions. The final effects of these auctions on industry coordination and organization have yet to be determined. In New York City, an opposite picture can be drawn, but the potential for change is no less. The flower market areas of West 28th Street in New York City, sometimes known in the trade as "The Den of



Forty Thieves" (Appendix A), has had a dwindling population of wholesalers for several years. The area is congested and shopping is anything but pleasurable. This situation truly may be fertile ground for the seeds of change.

Change is happening in the cut flower industry; whether because of new or decaying markets, operators at all levels are suggesting different market channels. Chapter VI depicted the various possibilities of product flow (Figure 6-6). The traditional grower-wholesaler-retailer distribution system has many alternatives today. Many of the alternatives no doubt were created by the dissatisfaction of operators over existing procedures in the industry. Part of this modification process includes the transformation of roles of some industry operations. The case of the grower who incorporates a shipping function into his list of services is well known. More recently, however, the industry has been witness to other adaptations as well. Appendix A reports on some wholesalers who have established design centers to make arrangements for mass marketers or other retailers. Some retailers have established essentially the same kind of operation, as central design centers "manufacture" series of like arrangements for distribution to several satellite stores. Many similar changes will likely be spawned in the future.

Other industry changes may appear minor but are often no less important as far as industry organization and coordination are concerned. In many areas, delivery cooperatives are operated by or in conjunction with retailers. These pools are designed for more efficient use of delivery persons and equipment and especially fuel. Members typically become responsible for the delivery of one another's orders in

specific parts of the city or town. A consequence of such organization, however, is often a lessening of the frequency with which orders can be delivered to various parts of the area. Operators may only meet once or twice a day to exchange orders; orders for same-day delivery may be restricted to hours before such transfers take place.

Other cooperatives can be as equally important to members. Such cooperatives have been formed by florists for ordering both perishables and/or hard goods. Some cooperatives have been formed by growers for selling their produce and/or for buying inputs. As some of the wholesale markets were founded by cooperatives, it is even conceivable that additional markets will be formed in the future, perhaps to handle the flows of imported merchandise.

It is probably safe to assume that the organization and coordination of the cut flower industry will continue to experience change as operators continue to experiment with various alternatives and innovations.

Extent to Which Supply Offerings of Sellers  
Match the Demand Preferences of Buyers

Economic theory defines the market price as representing that point which matches supply offerings with quantities demanded. Yet, as every consumer knows, items purchased do not always exactly match the sought after ideal. Often an item gets purchased because it is the best available at a given point in time. Sometimes the value of time itself takes precedence over search costs and a selection is made almost on impulse. In such cases, a purchased product may only approximate the ideal; the market clearing price then may not equate supply offerings

precisely with the quantities of the ideal items sought. This becomes a problem of supply and demand coordination.

Another issue surfaces when operators restrict supplies, demand or prices from what might be their normal movement. The facts that there is essentially no long-term product storage for cut flowers and that product gets abandoned in the market system (in preference to fresher stock, etc.) contribute to the "mismatch" of supplies and demand. Poor coordination in the subsector only accentuates such problems. A market disequilibrium can occur in which either excess supply or excess demand results.

The hypotheses of Chapter II propose several ideas in this area. Hypothesis H11 suggests that the degree of coordination of supply and demand is a function of the technology of coordination and the dispersion of control, with greater coordination resulting from higher technology of coordination and more concentrated control of the subsector. Hypothesis H15 suggests that coordination of supply and demand is a function of pricing accuracy, information flow, cooperation between subsector members and influence over demand. Hypothesis H16 suggests that, when one stage has significant control over supply, synchronization of supply and demand is improved.

Given the fact that the cut flower industry has typically displayed less coordination than many industries--even other agriculturally oriented fields--and the fact that the competitive nature of the cut flower industry at every level and in almost every locale precludes control by an individual firm, one might hypothesize that supply and demand seldom match well. There is some evidence to support this conclusion. Yet, the question of supply offerings matching demand

preferences also includes the appropriateness of varieties as well as quantities. Here, too, there is evidence to suggest that the optimum is not reached.

This section will address these issues. The accuracy with which demand preferences are perceived at different levels of the industry will be examined. Also, the ability of participants to influence supply or demand and the flexibility of resource use will be considered. Finally, this section will probe the question of the incentives involved for matching and for not matching the supply and the demand in the industry.

#### Accuracy with Which Demand Preferences Are Perceived at Different Stages

Discussion of the issue of matching supply and demand must begin with the questioning of demand perceptions. For an appropriate match the industry must accurately perceive consumer preferences. In turn, all members of the supply channel must perceive the desires of operators following them in the distribution system; otherwise, losses or shortages will occur.

The cut flower industry has itself studied consumers on many occasions in an attempt to discover attitudes about flowers. The American Florists Marketing Council (AFMC) has commissioned several studies on the industry. Perhaps the most famous report, "A Psychographic Study of the Market for Flowers," by Dr. Emanuel Denby, attempted to determine facts about the likely floral consumer. Denby divided female floral consumers into "Flower Lovers," "Pragmatic Indulgers," "Wishful Thinkers," "The Uncommitted" and "The Elderly Dispirited." Males were

divided into "The Impulsives," "Nature Lovers," "Traditionalists" and "The Obligated" [FTD, 1977].

Florists' Transworld Delivery Association (FTD) has also conducted numerous surveys. Among the studies conducted was one which attempted to detail various factors cited which help to insure the success of special holiday arrangements. Of primary importance was the finding that holiday arrangements must specifically relate to the holiday or time of the year (as opposed to just being pretty). Accessories inserted into an arrangement, e.g., a heart at Valentine's Day, were found to be a second key at making a seasonal arrangement a good seller. Only third on the list of general characteristics favoring particular arrangements were such attributes as the appeal of certain colors, flowers or shape of the arrangement. Of less consequence to the consumers surveyed were factors such as size, versatility, uniqueness and compatability with surroundings where the arrangement might be displayed, etc. [FTD, 1977].

Yet, one still must ask to what extent do retailers interpret such signals accurately and translate them into satisfactory arrangements in the consumer's eyes. FTD provides a clue to this with the results of a study conducted in 1979. Florists and consumers were each asked to rank five arrangements considered appropriate for various occasions. In the test of Easter arrangements, the centerpiece selected as best by 60 percent of the florists was only the top choice of 30 percent of the consumers; a different selection was the top vote-getter of the consumers and was most favored by 37 percent of these potential buyers. The region of the country from which the consumer hailed seemed to play a role in their selections; the Easter arrangement favored by

most from the East and Midwest came in second among Southerners and fourth out of five choices among those from the West. In the Mother's Day test, the item considered best by florists was chosen by consumers as among the worst, and the selection most favored by consumers was rated the worst by florists. FTD's primary conclusion is obvious; the arrangements florists prefer are not always the arrangements favored by consumers [FTD, 1982a]. It is interesting to note that some regional bias was also demonstrated during the tests. This suggests even further problems in matching consumer desires when only one item is featured for nationwide promotions during the typical holiday season. Although other selections are available, not all consumers may be aware of these possibilities.

Peter Pfahl [1968] cites several studies in his book on the retail florist business. He concludes that retail florists are too often likely to sell what they want to sell rather than sell what the consumer wants to buy.

One does not have to cite studies to confirm Pfahl's perceptions. Instead, one may seek confirmation by examining sales at Valentine's Day. During this holiday, the rose is king. Yet, the wire services feature arrangements which specifically avoid the use of roses. Granted is the fact that roses practically sell themselves on this holiday and that supply in many areas does not meet the demand for roses at this time of the year. The wire services purposely avoid roses to keep the availability of the featured arrangement practically assured and its price more affordable. Hence, there is a rationale for their actions; yet one can only harmonize with Pfahl's conclusions.

Beyond the retailer, members of the distribution system probably at least perceive the demand preferences of their buyers. The realities of crop production (to be discussed later) or transportation shortages sometimes prevent operators from accurately responding to others' requests. In the case of gluts, product is not typically returned. Yet, as retailers buy from wholesalers and wholesalers buy from growers, shippers and importers, the feedback through the market channel from grower to retailer must be considered indicative of the demand preferences of those at succeeding levels.

As far as holiday specials are concerned, growers and wholesalers receive advance warnings as to varieties likely to be needed, although questions as to quantities may persist. The wire services have notified (through the trade press and trade organizations) growers and wholesalers, in recent years, as to the species that will be needed for featured holiday arrangements. Such notices have typically been generated well in advance of need, to allow growers time to adapt.

Another advantage some growers have at holiday times comes from the institution of policies requesting specific quantity needs. Many of these policies were originally generated as a result of mass marketers' requests for the ability to place specific orders. As many mass marketers had difficulty acquiring desired quantities of product at holiday times, growers found themselves approached with orders up to a year in advance. Some growers, in turn, have begun requiring like orders from their traditional customers. These policies have largely been established for potted blooming plants such as poinsettias and Easter lilies. However, many growers, shippers and wholesalers have reported holiday requests for cut flowers arriving several months in

advance, especially for products usually in short supply, e.g., roses at Valentine's Day.

#### Ability of Participants to Influence Supply or Demand

It may be argued that a big determinant of how well supply and demand meet would be the ability of participants to influence that supply or that demand. Indeed, in a less than perfectly competitive situation, the participants may hold enormous control over price as well as quantities marketed. The cut flower industry is, however, composed of many suppliers and many consumers at each level of the market channel. There are many operators who, as members of trade groups or cooperatives, collectively can influence or attempt to influence supply and demand on a local, regional or national scale. In some local situations, there may even be one large operator who can influence supplies, demand and/or prices.

One of the biggest sources of the supply of cut flowers is from imports. The use of imports has naturally generated much controversy, and many groups have chosen sides with or against importers in their attempts either to partially block increased import levels or to assure their continued free access to domestic markets. Roses, Inc., a national rose growers organization, has, for example, petitioned the U.S. International Trade Commission (USITC) on more than one occasion in attempts to curb imports. Other grower groups representing chrysanthemum and carnation growers have also been involved in similar attempts in the past; arguments frequently are aimed toward trying to prove serious injury to domestic operators. Arguing on the side of the importers have been florist groups, most notably FTD. Motions against import controls



have centered on the belief that some flower species have been less than readily available at certain times of the year (e.g., holidays) and in certain locales [Nicholas, 1980b].

Another prominent and perhaps more successful way in which groups affect supplies and demand is when the various wire services announce their "needs lists" of various species for upcoming holiday specials. These lists are an attempt to assure needed supplies of various colors and flowers for arrangements that will be featured in national advertising campaigns. Later, when the specific seasons arrive, the wire services feature these same flowers in their advertisements and, hence, attempt to sway consumers into purchasing the associated arrangements from member florists. An added benefit is derived when the member florists buy hard goods accessories from the wire service to complete the desired look.

Other attempts at influencing demand can be attributed to the Society of American Florists' American Florists Marketing Council (AFMC). The AFMC has been responsible for promoting the "Friday Flowers" campaign and National Secretary's Day and Week. Although these promotions have had varied success, there are some areas of the country in which sales have markedly increased. These promotions are more aimed at spurring flower sales in general than in influencing demand for any particular species, however. (The wire services again feature specific arrangements for National Secretary's Week and here growers, wholesalers and retailers may find needs lists for certain species.) If the Floraboard referendum (to be discussed later) passes the upcoming grower vote, it may become a dominant advertising force as well; the Society of

American Florists has played a major role in efforts to get Floraboard established.

Other than these or similar groups, any ability to amass influence on supply or on demand has not been demonstrated, except on scattered, purely local occasions involving local cooperative groups or very large individual firms; the potential for some influence or even control does exist, however, in many instances. For example, Denver Wholesale Florists Company collectively markets the output of over 30 growers in Colorado. Israeli imports of miniature/spray carnations account for about half of the domestic supply (Chapter IV); if desired, Israeli importers could probably suspend shipments of this commodity on a temporary basis and drive prices higher. Results of a recent survey suggest that as much as 60 percent of the rose crop in the U.S. and Canada may be accounted for by only 20 percent of the rose producers [Prince and Robertson, 1982]; this provides further potential for control. If Miami area importers formed a cooperative and acted collectively, there is no doubt concerning their potential market power, as the Colombian products that they import account for the majority of the supply of several species. Florida gladiolus producers could practically dictate their own future if they were to organize and act collectively, as there are literally only a handful of growers that would need to be consulted.

Still, as the industry is largely made up of small independent businessmen, such collective activity seldom occurs. It is this independence which, more than any other factor, probably contributes to the lack of ability to influence supply and demand. Indeed, drastic

aberrations in the weather may do more to influence supply than could any industry force at present.

Yet, as individuals, operators at almost every level of the industry have tremendous abilities to influence the specific species used or purchased. This comes about partly due to the tremendous dependence the industry places on telephone communications (and the like) at all levels of the distribution system. Hence, growers, wholesalers and retailers could easily suggest to their "blind" customers the availability of specific species of which supplies are long. Special bargains could be offered on such species as well, and operators could claim to be sold out temporarily of easily moving species in the hopes of liquidating their more plentiful supplies. Almost without exception, operators would never be caught making such misstatements. Trust obviously plays a big role in telephone transactions.

At the retail level, such powers of influence are especially great. With the possible exceptions of roses on Valentine's Day and some wire service orders in which the consumer has selected a specific arrangement from a selection guide or the featured holiday arrangement, the retail florists have tremendous influence upon demand. First, both traditional and mass market retailers select the flowers for their inventories. Although mass market customers usually shop in person, about three-fourths of traditional florist customers shop by telephone [FTD, 1982c]. Hence, florists can suggest certain inventoried flowers which may be slow moving, the cheapest, the most expensive or those which simply offer the greatest profit potential. Furthermore, many arrangements may specify only mixed flowers, seasonal flowers or the occasion for which the flowers are being sent, i.e., a birthday arrangement. This then

allows the floral designer to offer flowers according to his personal bias. Here, the power to influence demand is indeed great.

#### Flexibility of Resource Use

One of the chief limitations placed on members of the cut flower industry must be considered the lack of flexibility of resource use. Operators at all levels of the industry face some restrictions, whether imposed by the physical properties of their resources or those imposed by the rigidity of their predicaments in supplying product on a long range basis. These restraints will be discussed below.

Greenhouse operators perhaps face the most severe constrictions on resource use. Greenhouses typically set defined limits. Expansion of production for a firm with fully utilized greenhouses is difficult. Plastic covered, quonset-hut style greenhouses can be raised or lowered almost at will; however, not all crops are suited to growing in these structures. As such, expansion possibilities, at least in the short run, must be considered limited, at best. Even in the long run, increased production possibilities for some firms may be difficult due to extensive capital requirements, zoning problems or the limits of other resources (e.g., land, management, labor, etc.).

The greenhouse may place some further limits on growers. While cut flower growers can sometimes switch their operations to potted plant production, bedding plant production or even greenhouse vegetable production, these growers are really locked-in to some kind of horticultural enterprise, that is, unless complete removal of the greenhouse is considered an option. Although plastic covered, quonset-hut greenhouse models can be considered quite portable, a glass and steel or

glass and aluminum model can definitely be considered an impediment to resource flexibility.

Also, somewhat limiting may be the greenhouse which was designed with a specific crop in mind. While these may be the best design structures for certain crops, efficient production of other crops may be almost impossible without major modifications. Examples are numerous. Many rose greenhouses have ground beds which would easily allow for the installation of portable or permanent benches in case the operator wishes to leave rose production. However, rose greenhouses also are often those with the highest roofs; although this makes conversion to other crops easy, it may also make production after conversion somewhat unaffordable due to the exorbitant heating costs encountered from heating all of the extra air space and the relatively lower returns that other crops might generate. Conversely, switching to rose production might often be questionable due to the lower roofs more common in non-rose greenhouses.

Other cases of restrictive facilities would include the rare greenhouse with permanent benches. Here only crops successfully raised on benches can be produced without undertaking drastic measures. Conversely, the construction of benches might be required for the efficient production of some crops if only ground beds previously existed. Greenhouse glazing may also restrict crop selection due to the limited light transmission capabilities of some coverings, e.g., fiberglass or plastic.

Another kind of limitation may be presented by the crops being raised. Rose and carnation growers, for instance, are often financially committed in the short-run to the production of these crops once begun

because of the crops' multiple year cropping sequences. Growers desiring to remove these crops before several successive cuttings have occurred may do so at a loss. Furthermore, due to the tremendous time and labor requirements for removing and replacing such perennial plants (including bed preparation, fumigation, the possible realigning of irrigation systems, etc.), a grower may be "trapped" into producing a less-than-desirable variety at least until the off-peak summer months. Another liability of producing perennial plants (as compared with those which yield a single flower cutting) is the continuous nature of production itself; planning for adequate winter supplies usually results in excess capacity during the summer months.

Growers operating without greenhouses or with only portable models have relatively few constraints in comparison.

At the retail and wholesale levels of the industry some constraints on equipment might exist, but these are usually minor in comparison with those of the greenhouse operator. Floral refrigerators, for example, may be somewhat specific in use due to design, size or shape. However, these can often be sold should such be desired. Furthermore, retail shops or wholesale warehouses can both be easily altered for other uses should they be sold. Operators at these levels are not usually restricted as to which crops they may inventory. Very few shops have any permanent furnishings that restrict the inventorying of even non-floricultural products, although some shops do have built-in coolers or plant beds.

Perhaps of concern as much as any part of the distribution system should be the flexibility of transportation services. During this author's travel to view the industry, many operators spoke of the

inflexibilities of transportation as a major problem. The great variability in the quantities demanded during the year forces many shippers either to add capacity during peak demand periods or be faced with excess capacity during much of the year. Unfortunately, many of the peaks in the cut flower industry occur concurrently with peaks of other industries vying for these services; valleys occasionally coincide as well. Hence, florists complain that their Christmas flowers were "bumped" by packages being mailed and air freight contracts which gave the U.S. Postal Service priority to cargo spaces. Conversely, many of the other demands on refrigerated trucks, e.g., the fruit and vegetable industries, ease in the summer time as well. The weather could also obviously play havoc with transportation services. Hence, one must conclude that transportation services are a real key to flower availability. The deregulation of transportation services may directly affect the cut flower industry if rates are drastically altered or if competitive pressures change the number of operators or the structure of the carrier industry.

One may then conclude that there are some inflexibilities of resource use in the cut flower industry. There are also some other restraints from cropping sequences, etc., which may prohibit immediate or practical conversions to other crops. How much these rigidities prevent the industry from successfully matching supplies with demand, on an industry basis, is another matter. As the U.S. cut flower industry now operates as one segment of a world flower market, supplies are probably available to fill most demands, given fair warning. One may still question the flexibility of the logistics involved, however, as

transportation may in some cases restrict supplies from reaching demand centers as readily as might be desired.

#### Incentives Involved for Matching Supply and Demand

One could surmise that the benefits derived from accurately matching supplies with demands in all markets and at all times would maximize sales while minimizing losses and would probably lead to minimize profits. Indeed, in a perfectly competitive market, such is assumed. Yet, for one reason or another, supplies do not always match demands and market disequilibriums occur. Sometimes there are even some perceived incentives for not perfectly matching consumers' preferences. In some cases, greater profits may be realized by not catering to consumer wishes, especially in the short run. These cases often result from less than ideal performance in subsector coordination in a previous time period, which in turn creates excess supplies or demands for the current time period. Discussion of why such events may occur and examples of resulting situations will be discussed below.

The previously mentioned hypotheses, H11, H15 and H16, suggest some of the factors influencing the coordination of supply and demand in a subsector. In turn, these hypotheses serve as a source for examples of why poor coordination can occur. First, hypothesis H11 points out that greater supply-demand coordination will result with greater technology of coordination and more concentrated control in the subsector. In many cases, there is no coordination technology in the U.S. cut flower industry; in other cases, minimal coordination efforts are displayed as part of sales discussions or the like. The industry is just beginning to experience its first real coordination technology through the use of



computers by individual firms. The competitive nature of the industry at all levels further suggests little real concentration of control. Hence, opportunities for supply not to match demand could readily develop.

It should be noted that perhaps the greatest levels of coordination technology and of concentration probably exist in the wire service aspects of the cut flower industry. Here, relatively few wire services operate, and by far the largest share of all wire service transactions are made through FTD. Although not alone in this type of venture, FTD operates the Mercury Network, which ties participating FTD members' shops to a central coordinating center for processing wire service transactions. The potential for improving the industry's supply-demand match of this and similar systems is tremendous. The Mercury Network, for its part, can be said already to match sending and receiving florists accurately with "long-distance" orders.

Hypothesis H15 suggests that coordination of supply and demand is a function of pricing accuracy, information flow, cooperation between sub-sector members and influence over demand. The ancillary hypotheses to H15 suggest several points. Ancillary hypothesis a suggests that food processing and distribution firms are in the best position to coordinate the food industry due to their access to information on consumer preferences and their ability to influence demand. Similarly, the wire services and perhaps some large middlemen, e.g., distributors or central processing units of large traditional or mass market retailers, might be in the best position to coordinate the cut flower industry due to their access to information on consumer preferences and their abilities to influence cut flower demand. Indeed, some of the best examples of

coordination in the cut flower industry are those of mass marketers who service their individual stores through a central distribution center. Jewel Foods of Chicago, Alpha Beta of Southern California and Giant Foods of the Baltimore-Washington area all serve as examples of such a system. In the traditional retail segment of the industry, Bachman's, Inc., of Minneapolis-St. Paul is probably the best example of a similar situation. The ancillary hypotheses b and c of H15 tend to support the statement that many of the Colombian-Miami firms which grow, import and handle initial distribution of their product (or similar Dutch and Israeli concerns located elsewhere in the U.S.) provide examples of relatively good industry coordination. Information flows via telex to producers from importers who monitor the market activity of their wholesale and retail customers. Finally, H15's ancillary hypothesis d faults geographical dispersion and numerous intermediaries with poor coordination. If anything, the cut flower industry can certainly claim its share of both geographical dispersion and numerous intermediaries. Current industry moves by many operators toward direct contacts and the bypassing of middlemen then could improve coordination efforts if information flow and cooperation are improved, according to the hypothesis.

Hypothesis H16 reasserts previous conclusions that improvements in the supply-demand match will occur when one stage has significant control over supply. This hypothesis' ancillary hypothesis b suggests that commodities with marketing orders that allow for supply management and allocation, e.g., cranberries and Florida celery, enjoy better coordination than similar commodities without marketing orders, e.g.,

cut flowers, or commodities with marketing orders that concentrate on influencing demand, e.g., Florida orange juice.

Comparing these hypotheses to the previously described characteristics of the industry would tend to support the finding of poor synchronization of supply and demand. Indeed, this is probably what has been the case in the past. It is also, unfortunately, what is for the most part present in the industry today.

There are many occasions when there may be incentives to match or to try to deviate from matching supply with demand, however. On the one hand are characteristics of the flowers themselves. Irrespective of consumer preferences, one finds that chrysanthemums are probably easiest to inventory because of their post-harvest longevity. Carnations, especially if treated with silver thiosulfate or related compounds, also perform better than species such as roses. Hence, during slow periods of market activity, one might anticipate more florists handling chrysanthemums and carnations and fewer handling a wide variety of roses. Supplies of the more perishable species may go unsold due to the apprehensions of wary retailers, regardless of consumer wants.

Similarly, roses and carnations generally require greater commitments from growers due to the long-term nature of the production of these crops when compared with chrysanthemums, for example. Depending on labor and capital capabilities then, growers may prefer raising certain crops to others. Particular cultivars of some flowers also produce better, mature in shorter time periods, blossom more reliably when forcing for specific dates, are more versatile or are better post-harvest performers than others. Hence, additional incentives may exist for ignoring consumer desires in some cases, if they do not mesh with

the inclinations of the growers. In these cases, those supplies that do exist will still match up with demand at some market clearing price, although it may be higher than the ideal from the consumer's point of view.

There may be cases in the marketplace where a temporary disequilibrium may occur. As cut flowers are perishable and as long-term storage options are limited in scope, product abandonment somewhere in the market channel may result in lieu of operators striving for a perfect supply-demand match. Theoretically, prices of aging flowers should continue to drop until the flowers are sold. However, the continual replenishment of supplies with fresher stocks and, at retail, an operator's realization of the highly inelastic nature of the product's demand may result in the discarding of older merchandise. Operators may choose not to add to an already glutted market, for instance. Other cases of market failures may result from operators ignoring market signals for various motives. Examples are offered.

Many cases of excess supply of certain species can occur, at least partly because of poor supply-demand coordination in a previous time period. In such cases, operators are likely to push the most perishable of such species, hence, an incentive for not necessarily matching supplies with demand is revealed. Of course, the methods used to speed sales of slow moving species, e.g., price discounting, can effect the demands needed for an "artificial" supply-demand match. Accurate coordination initially would have prevented the supply overages. Perishability of the product could thus be claimed as a strong incentive for matching supply and demand.

Grades and standards provide another area where the supply-demand synchronization issue arises. As nature is involved in the production process, growers are not necessarily assured of producing only top quality produce. As a result, produce falling below the standards for a top grade may not get sold unless there is a strong market demand or the price is right. Producers of less than top quality merchandise may reduce their prices to an artificially low level in order to generate some sales; this is most likely to happen during extreme market lulls. Hence, a possible motive for not matching supplies and demand accurately unfolds. Frequent producers of sub-standard merchandise are, therefore, likely to belittle grades and standards, while producers of top quality merchandise suffer. If policies on grades and standards were uniformly instituted, however, incentives might be stronger for equating the demands for various grades with the supplies of each. Demand would not necessarily be for only top grades, and there may be greater incentive for improving quality. Producers, other industry operatives and consumers would all be more assured of appropriate compensation for merchandise delivered, no matter its class. Grades and standards then can be looked at as either an incentive for or against matching supplies accurately with demand, depending on one's perspective.

Valentine's Day serves as an example of a time when prices may not accurately reflect the true intersection of supply and demand. Due to the physical limitations of nature, of greenhouses or whatever, the supply of roses does not satisfactorily keep pace with demand in many locales for this holiday. At the same time, cultural mores cause the demand curve to shift up. Rose prices peak at the shipping points and at the wholesale markets (Chapter V), yet Zeller [1981] confirmed that

some retailers failed to pass the full effects of the price increases on to their consumers. As a matter of fact, whether because of sensitivity about price gouging or the appearance of same, motives attributed to loyalty to regular patrons or the like, some retailers keep prices stable on Valentine's Day or at levels which are artificially lower than what might be reflected from a true supply-demand intersection. Naturally, product shortages result from the excess demand.

One final issue which must again be raised is what is demanded. This industry has taken some surveys with respect to its product; yet in comparison with other industries, studies have been few in number. There is great debate on what is preferred by the end consumer. For the research that has been completed, questionable survey methods, regional biases or some other particulars have been cited as reasons to make the results inapplicable to a particular situation (Appendix A). Then again, perhaps the time, money, effort and cooperation needed for accurately synchronizing supply offerings with demand preferences have themselves been perceived as an incentive for not struggling for an accurate match.

Once discovered and accepted as fact, known demand preferences would provide the greatest incentive for suppliers matching consumer pleasures. As has happened in numerous retailing businesses (e.g., groceries, liquor, shopping centers, etc.), those that supplied what the consumer wanted (wide variety, easy one-stop shopping and convenience) easily dominated the traditional neighborhood stores (which relied mostly on consumer loyalty for survival). Supermarkets have replaced the small "mom and pop" food stores. Chain liquor stores have replaced the corner taverns. Large regional shopping malls have plagued downtown

stores in many cities and towns. Survival depends on satisfying consumer wants, not on consumer loyalty. Once preferences are known, survival will depend on supplying what is demanded.

Equity with Which Risks, Rights, Responsibilities  
and Returns Are Distributed within the Subsector

By and large, the grower takes the most risks in the subsector. The typical grower has the largest investment in facilities. Depending on location, the cost of operating those facilities can be quite high compared with the costs of other subsector participants. Land could be cheaper for the grower on a per acre basis than for the mostly urban-bound retailer and wholesaler, but the total land costs may be the highest for the average grower due to the quantity which must be used. Finally, depending on the crops raised and the cropping sequences used, grower risks may be substantial due to the timing requirements for crops. Missing a holiday market can be devastating. Growers as a group do indeed have fantastic responsibilities for the subsector, as the initiators of the product.

Retailers and middlemen have life relatively easy. If market demand rises, the simple ordering of additional produce will satisfy the demand with very little risk involved. If the demand drops in the marketplace, a cessation of orders will alleviate risks. It is only when long term supply contracts are negotiated and enforced that middlemen and retailers may face risk. Yet, if contract enforcement is a two-way street (which in this industry has not been the case too often), the grower may again face risk as he has "Mother Nature" to contend with in order to meet his supply commitments.

Hypothesis H20 of Chapter II suggested that the equity with which rights, responsibilities and returns are distributed among subsector participants is a function of the equality of bargaining power between subsector dyads and historical patterns of property right distribution. Wholesalers and retailers have had that bargaining power in the past as they have determined what they will buy. Hence, the grower has perhaps been undercompensated. If risk is included, evidence already presented in this chapter might confirm grower undercompensation relative to other subsector members, as the returns received by the grower do not compare equitably with the risks and responsibilities of this product initiator. The fact that all subsector operators have the right to enter or exit any level of the industry at will provides little consolation to the entrepreneur who has already invested heavily in the hopes of achieving some fair return for his capital and operating funds.

#### Competitive Environment in the Subsector

The competitive environment in any subsector is a big determinant of behavior and performance in that subsector. The balance of market power, trends of widening or narrowing of markets, the amount of access to and/or foreclosure of markets, the equality of market information, the fairness of competitive behavior and the numbers of entries and exits at different stages of the subsector can all serve to gauge this competitive environment. This section will focus on each of these areas.



### Balance of Market Power

One of the keys to determining the balance of market power in any subsector might be considered the availability of supply. For example, in the monopoly case, there is only one seller and that seller has a definite amount of market power. In the case of a monopsonist, there is only one buyer; again, market power can be exerted.

The U.S. cut flower industry is probably not unusual for most subsectors producing a product in that a minority of operators accounts for a majority share of the total produced; however, this subsector may be more concentrated than most. Prince and Robertson [1982] discerned that about 20 percent of North American rose growers accounted for 60 percent of the commodity produced in 1980. This is not atypical for the cut flower industry. In 1980, Florida's eight gladiolus producers (12 percent of the total number of producers reported by USDA's Floriculture Crops) accounted for over 68 percent of the total U.S. production reported. Other similarities can be seen by comparing the data from Tables 4-1 and 4-5 and Table 6-1. They showed that 28.2 percent of domestic cut flower growing firms accounted for nearly 87 percent of sales.

Yet, with even these types of production concentrations, there is great accessibility in the marketplace. Given adequate lead time, any wholesaler or any retailer can get needed supplies at will. Imported produce is also available to fill any voids created by abnormal market conditions in this country.

However, in cases of extreme urgency, wholesalers and retailers may find themselves dependent on the supplies of only a limited number of

producers who may be present in any particular locality. Retailers may be further burdened by their dependence on the few wholesalers serving their area. This can become an extremely tenuous situation, especially in smaller cities or towns.

Other than supply concerns, the balance of market power issue deals with the number of competing entities at each market level. Given the numbers of retailers, growers and middlemen that were outlined in Chapter VI, one can surmise that competition is prevalent at all levels. On the whole, this is probably true. Yet, as previously noted, there are potentials for market power among groups (e.g., rose growers, importers in Miami, Florida, gladiolus growers, etc.) and in particular locales where limited numbers of channel participants may exist.

There are other examples of potential market power; in some instances, these may have already been directly or indirectly exercised. At all levels of the marketing channel, there exist instances of firms which operate several outlets; the selling or buying power which may be amassed from the volumes handled may, in fact, create a force with which smaller operators have to cope. Mass marketers who operate using a central purchasing warehouse and aggressive multi-unit retail florists provide examples at the retail level of the industry. There are several wholesalers operating multiple outlet firms in the East and Midwest which provide illustrations of instances in which market power could be amassed at the wholesale level. There are even growers and suppliers operating with multiple branches, although some of these may be as much for marketing or production efficiencies, or for crop-source protection (similar to germplasm banks) reasons, as they are for amassing market power.

### Widening or Narrowing of Markets

Another factor foretelling the competitive environment in a subsector is the widening or narrowing of markets. In instances of widening markets, one would expect a healthy business atmosphere with enough opportunities to attract additional firms. A narrowing marketplace might foretell decreased competition or shifting market power.

In the cut flower industry, one might conclude that there are at least some expanding opportunities. Table 5-2 showed that the number of retail flower shops has been rising over the last several years. Table 5-3 told of a generally increasing trend in per capita sales of retail flower shops, even after sales were adjusted for inflation. Table 5-4 confirmed that the surge in shop numbers is greater than the growth in population would account for alone (as shop numbers per 10,000 persons have moved upward). Table 5-5 showed this increase to have occurred in every region of the country during the decade of the 1970s. Table 5-5 also shows that the number of shops per 10,000 persons can be cyclical in nature. (It should be noted that some of the apparent rise in shop numbers of the 1970s may have been spawned by the foliage plant boom; some have speculated on the possibility that information on many of the less-than-full-service plant boutiques that developed, but which have since folded, may have been included in the retail census data.)

Some FTD [1982c] data support the hypothesis of a widening retail market. Gross sales of the 4,450 retail florists surveyed (in both years) rose an average 76 percent between 1975 and 1980. During the same period, the median sales increase was 55 percent and the consumer price index rose only 53 percent.

The rise in mass marketing over the past decade underlies the increased opportunities in the retail marketplace. However, this same increase may act as a catalyst to reverse the increased trend in numbers in the traditional retail segment of the industry. Time will tell.

At other levels of the industry, however, the opportunities may not be as great. Although the number of wholesalers increased between 1972 and 1977 as reported by the Censuses of Wholesale Trade [U.S. Bureau of the Census, 1976, 1979] and noted in Chapter VI, there is disagreement as to whether or not opportunities in wholesaling operations are plentiful. Chapter VI cited several authors who were skeptical about wholesaling opportunities, at least in the traditional sense (e.g., Sullivan et al. [1980] and Goodrich et al. [1973]). The fact that many growers are now shipping direct and that many retailers are seeking direct grower or importer contact may preclude many growth opportunities at the traditional wholesale level.

Similarly, opportunities for substantial growth in numbers at the grower level may be limited in the U.S. Although sales of cut flower products have risen at retail, much of the increased supply has been attributed to imports (Tables 4-10 through 4-13). Domestically, the larger producers are dominating the industry (Table 6-1). However, with a continued interest in the mass marketing of floricultural products and a growth in per capita consumption, additional product, no matter its source, will likely be needed.

Hence, one might conclude that the markets in the cut flower industry are generally expanding. Opportunities in the traditional segments of the industry may not be uniformly on the rise, however.

Yet, new market channel variants and increased per capita consumption portend new horizons for the subsector as a whole. The fact that domestic growers have declined in numbers suggests that the domestic producer may be in a weakened position relative to his historical place in the market channel. Additional numbers of large retailers, even in the form of mass marketers, might also suggest that at least some retailers may have gained market power relative to traditional wholesalers; many of these larger retailers are often bypassing the traditional middlemen.

#### Access to and/or Foreclosure of Markets

One of the characteristics of a perfectly competitive environment is the presence of free entry and exit conditions. The cut flower industry generally typifies such an environment. However, there are certain restrictions in some market areas which may act, perhaps only subtly, to preclude additional competition. While these restrictions may not prohibit free entry, they may in effect make market entry relatively expensive.

Hypotheses H21 and H22 of Chapter II speak of large firm advantages and market entry and exit. Hypothesis H21 suggests that large firms enjoy advantages over small firms in contracting or vertical integration. Contracts with large firms thus may stimulate increased concentration. Hypothesis H22 adds that vertical integration or contracts may increase the barriers to entry if they result in substantial control. While contracts are not that prevalent in the cut flower industry, there has been some experimentation with contractual arrangements and a few cases of adoption. Vertical integration, on the

other hand, is common; Chapter VI describes examples of firms bypassing others in the market channel to gain better control over their product flows.

Contracting and vertical coordination, however, are not the only concerns about market accessibility. At the retail level of the industry, free entry and exit are generally available. However, certain markets are less than enticing for new floral businesses. Some markets may simply be saturated with florists, and unless a new entrant had an entirely different marketing approach, a firm may have trouble attracting loyal customers away from already established firms. There are also some markets which could be considered dominated by one or more large multi-outlet businesses. Competing with such heavily capitalized firms, in any part of town, may be extremely difficult if not impossible.

The already established firms in an area may have added advantages afforded by certain business practices or relationships. Such methods can act as barriers to entry, if only because of the higher costs facing a less experienced competitor. Already established delivery pools, or ordering pools and arrangements, provide examples of business practices that may act as barriers to entry of new firms. Competitive disadvantage might also be realized by new entrants who may not yet be associated with national wire services; such affiliations often take some time and experience to establish and/or to become beneficial.

Although usually not a problem, some retailers may face difficulty in arranging supply. This has been most often reported by non-traditional marketers. Wholesalers claim to fear retaliation by their traditional retail or already established clients when refusing to become part of the supply channel for a new firm.

Retail firm exit generally goes unopposed.

Entrepreneurs desiring to establish themselves as wholesalers also generally have no problems. There may be some exceptions here, however, in certain markets because of saturation and the like. In the cities with established central wholesale flower markets, i.e., New York City, Portland, Boston, Los Angeles and San Francisco, available space in the wholesale markets (or market neighborhood in the case of New York) could be in short supply at particular points in time. New entrants may find themselves forced to seek space in other than the traditional areas; this could serve as a distinct disadvantage. Some isolation may also occur if a firm decides to serve a non-traditional clientele.

Firm exit at the wholesale level generally goes unhindered, though it is seldom unnoticed.

At the grower level of the industry, firm entry and exit are probably the most unobstructed. Depending on the locale, however, zoning laws, taxes, ability to get loans, real estate prices, etc., may provide barriers to establishment in particular spots. Growers might also find it difficult to produce profitably some cut flower crops in particular areas which already attract large concentrations of a particular species. For instance, a grower might find the competition of imported pompon chrysanthemums arriving in Miami (mostly from Colombia) too much for the profitable establishment of a Florida pompon chrysanthemum growing operation. (Today, there are still a few such firms in operation in Florida, but the majority of their assets have long been fully depreciated.)

Firm exit at the grower level can sometimes be complicated by the disposal of assets. While it is possible to sell a greenhouse, older

structures can sometimes represent handicaps. Furthermore, selling a greenhouse in an area where many firms are leaving the industry can be nearly impossible. Parts of Massachusetts, an area once the center of the domestic carnation industry, are literally littered with closed greenhouse operations (Appendix A). Selling land also can be a problem at times if the land markets are depressed and few buyers are available.

Beyond the traditional retail, wholesale and growing levels of the industry, firm establishment would mostly involve competing against well established and generally highly capitalized institutions. In the supply area, for example, one finds only a few major firms furnishing carnation or chrysanthemum cuttings. Smaller businesses might profitably establish limited operations, but it might be very difficult to compete on a broad basis.

It may also be difficult to establish wire services, although there have been several recent instances of the formation of new firms. A wire service was started in 1980 which caters to mass marketers. In the mid-1970s, a traditional wire service firm offering exclusive territories was established in the form of Florists Clearing Network (FCN), but this firm is now owned by (but operated separately from) Teleflora. However, Florists Transworld Delivery Association (FTD), Teleflora, Inc., and Florafax International, Inc., have long dominated this segment of the industry. As one indication of the competitive atmosphere in the wire service field, however, it should be noted that cooperatively member-owned FTD, by far the largest wire service, has been sued on more than one occasion for various activities which were claimed to stifle competition.



Cooperatives, in some instances, may also provide some advantages to member firms which may act as economic barriers to firms which are not so affiliated. Such cooperatives may be formed for ordering or selling of supplies, delivery or other essential business functions.

#### Equality of Market Information

A key characteristic of a perfectly competitive environment is the presence of perfect knowledge among market participants. Market information is important both from the standpoint of supplying outputs and the standpoint of purchasing inputs if firms are to remain competitive. Hypotheses H39 through H42 of Chapter II address the issue of providing comparative price information. The availability of such information, as discussed earlier in this chapter, reduces price dispersion among competing sellers and increases consumer satisfaction.

At the retail level, market information is not readily available. Consumers desiring competitive price data must generally bear the costs of seeking such information themselves. Occasionally one might find comparative advertisements placed by merchants, but this is rare, especially during the high demand periods (which usually coincide with the periods of greater price fluctuations). As shown earlier in this chapter, there is sometimes a considerable dollar variation in retail prices for like goods. This variation occurs both across cities and within cities; hence, retail price information for consumers may be advantageous.

Retailers, wholesalers, growers and others are able to take advantage of the Market News Service's wholesale market price and/or shipping price reports. Beginning with August 1982 these reports were

mailed only on a paid subscription basis; previously, they were available free for the asking. Reports from various industry sources confirm the expected; a reduced circulation results with the institution of subscription rates. Hence, there may be a reduction in market information. As such, a lessening of the competitive environment may result, and firms which cannot afford the subscription rates may be most affected. Nevertheless, it is recognized that some firms failed to use market information even when no costs were involved.

In this vein, it is important to note that market information may not be equal in another sense. One of the biggest criticisms of the reports of the Market News Service is their lack of consistent data. This, however, is more the fault of the industry rather than that of the service, for this problem largely relates to the lack of uniform grades and standards. What is reported in one market does not necessarily coincide with that reported elsewhere because grading procedures vary widely. Hence, operators may not get a true reading of prices in other markets even with these price reports. Those who gain feedback from clientele dispersed among several areas may have a distinct advantage over those relying solely on these reports.

Another aspect of market information is the affordability of market consultants. There are several industry consultants available for hire, and at least one firm publishes its market findings. These information sources, however, can be quite expensive; hence, only larger firms are likely to justify such expenditures.

Suppliers in the industry, depending on the level at which the supplies are used, often make themselves known to potential customers. Booths at trade fairs, travelling salespersons, advertisements in the

trade press and the like are often used by these firms. Still, the possibility exists that the firm operating with a smaller budget will be at a distinct disadvantage as business trips and subscriptions may be deemed less affordable than they would be at larger firms. Hence, some inequality of market information may not only exist but persist over time.

#### Fairness of Competitive Behavior

In analyzing the fairness of the competitive behavior at each level in the subsector, it is appropriate to consider the numbers of firms providing the sales with regard to the widening or narrowing of markets. This, in conjunction with references to the balance of market power, the accessibility of markets and the equality of market information, should give an indication of the fairness of competitive behavior in the subsector. Tables 6-1, 6-2 and 6-4 may be helpful in this respect.

At the retail level of the subsector competition must be considered a dominant marketing force, especially when compared with other segments of the industry. Table 5-2 showed data indicating an increase in numbers of florist shops in the U.S. over the last quarter century. Table 5-3 showed that real sales have not continuously risen. Table 7-7 combines these data to show adjusted sales per florist shop over the period. As this table indicates, real sales per shop have not continuously risen over the period. If sales had continued their climb even while shop numbers rose, it might cause one to question whether less than competitive forces were operating in the industry. The fact that such is not the case helps to support the contrary. Furthermore, comparison of Tables 6-1, 6-2 and 6-4 indicates that the retail segment

Table 7-7. Adjusted (1980 Dollars) Sales Per U.S. Florist Shop for Selected Years

Year	Adjusted Sales (\$1,000 in 1980)	U.S. Florist Shops (Number)	Sales Per Shop (\$)
1958	1,824,402	19,312	94,470
1963	2,217,695	19,801	111,999
1967	2,962,508	22,451	131,954
1972	3,621,758	24,464	148,044
1977	3,321,835	29,375	113,084

SOURCES: Table 5-3 (adjusted sales)  
Table 5-2 (number of U.S. florist shops)

of the industry is probably the least concentrated of the traditional industry segments. This information, combined with the influx of mass marketers, suggests that the industry is indeed experiencing competition at retail.

Yet, one must ask if the competition is fair. Although there are many cases where markets are dominated by one or more multi-outlet firms, the industry must still be considered non-concentrated. Data from the 1977 Census of Retail Trade [U.S. Bureau of the Census, 1979] suggested that the 50 largest firms in the retail segment of the industry only accounted for 4.4 percent of total retail florist sales in 1977. The top 85 firms or 1.04 percent of total firms (those with annual sales of at least \$1 million) were responsible for 6.04 percent of total retail sales. Counting all firms with sales of \$500,000 or more (2.73 percent of total firm numbers) still only included 13.8 percent of sales of U.S. florist shops. Table 6-4 summarizes these data on a shop rather than a firm basis. The conclusion must be one suggesting a relatively unconcentrated industry.

There are, however, instances in which some could claim "foul." Often these have come during attempts by retail florists to have non-traditional vendors regulated. The city of Detroit, for instance, passed an ordinance requiring the licensing of retail florists to protect an unsuspecting public from fraudulent and irresponsible floral merchants; the law was declared unconstitutional [Morse, 1981]. Retail florists in Southern California, upset about competition, complained about streetside flower peddlers to the bureau responsible for enforcement of labor standards; the guise used was for the protection of youngsters who were easy prey for "robbers and deviates" [Young, 1982b].

In Louisiana, a bill before the state legislature that would have required retailers arranging flowers to have a licensed florist on their staffs gave the news media a thrill. Louisiana already required licensed florists to have first obtained a horticulture degree. Naturally, florists claimed consumer protection was at stake, while the Louisiana Retailers Association, representing supermarkets which had floral sections, claimed unfair competition was the motive [Kent, 1981]. Many question the legitimacy of roadside vendors and other non-traditional outlets; others question whether the florist is more interested in protecting his own business. In any case, the industry's competitive image is involved.

At the wholesale level, competition is exemplified by the changing structure. Many growers and shippers are now seeking retail customers, and vice versa, in an attempt to bypass traditional wholesalers. These attempts may leave wholesalers in a weakened position. Such actions may be justified, as the wholesale segment of the industry, at least as defined by the 1977 Census of Wholesale Trade [U.S. Bureau of the Census, 1979], cannot claim anywhere near the non-concentrated level of sales as can retailers. Indeed, data from the 1977 Census, as summarized in Table 6-2, showed that the top 1.3 percent of firms accounted for nearly 19 percent of sales. The top 7.3 percent of firms were responsible for over 42 percent of merchant wholesalers' sales, and 40.8 percent of merchant wholesalers accounted for 84.4 percent of sales.

Yet, in that retailers can and do purchase from wholesalers, growers and shippers nationwide, one would have to maintain that there is a certain amount of competition in the marketplace. It is chiefly

when one is unable to take advantage of the transportation capabilities of the industry (e.g., sudden needs or poor connections) that the reliance upon a single wholesaler may put one at a competitive disadvantage. Too, the changing market channels should aid even the most remote retailer, as many other operators are now willing to make direct sales to retailers.

At the grower level, there is little if any serious competition among the various domestic operators. Growers occasionally must compete for sales during weak market periods, as relatively few sales occur. However, growers generally share secrets with one another and do business in a friendly atmosphere. This may indeed seem surprising in light of probably the most concentrated levels of concentration in the industry (Table 6-1). This may be explained by a larger battle that growers face, that of survival. Grower competition is more on the terms of making a profit in the light of market forces keeping prices down, while input price rises keep forcing costs up. In recent years, the skyrocketing price levels of fuel have forced many growers to scramble for alternative energy sources, to implement conservation technologies or to go out of business.

Domestic growers as a group have also had considerable market pressure cast upon them by imported product. Growers have petitioned the U.S. International Trade Commission (USITC) on numerous occasions for import relief. However, the USITC has repeatedly ruled that growers had failed to prove that serious injury was caused only by imports, other factors aside. There is no question that the relatively available quantities of imports have helped to keep flower prices low (Tables 4-10 through 4-13 and Table 4-4), but the USITC has not been convinced that

the plight of domestic growers (Table 4-5) has been solely the responsibility of imports (e.g., Burket [1977]).

In the fall of 1982, the International Trade Administration (ITA) of the U.S. Department of Commerce made a preliminary ruling assessing imports from Colombia a 4 percent duty to counteract tax subsidies offered to Colombian growers (by their government) who export. The duty increased to 5 percent in January 1983. This ruling, made in response to a petition made by the American Farm Bureau and five U.S. cut flower growers, marks the first time an agency of the U.S. government has heeded the calls of cut flower growers to restrict what the growers felt was unfair competition [Chance, 1982; Anonymous, 1982d]. Many other allegations have been made over the years relating to grower subsidies or transportation subsidies of product from other countries (Appendix A). Obviously there is a contention that imports pose some unfair competition for domestic growers.

The wire services present another area where the question of fairness of competitive behavior should be addressed. Florists' Transworld Delivery Association (FTD) is by far the largest wire service with about three-fourths of the wire service business [Olderr, 1980]. FTD is a member-owned cooperative which gives it some protection under the law. Nevertheless, FTD has been sued on more than one occasion for anti-competitive behavior and has operated in the past under various justice department consent agreements [Williams, 1960].

Still, the wire service arena, although very concentrated, offers many alternatives to floral consumers and to florists. Many florists operate using two or more wire services. (Dual memberships had been the subject of one of the earliest FTD suits brought by the Justice



Department [Williams, 1960].) Several new wire services have been formed in the last decade, each offering its own benefits and enticements for joining and the common characteristic of allowing long-distance transfer of floral orders.

Still, FTD's dominance must be noted. FTD has over 20,000 member florists [FTD, 1982c]. In 1975, it was estimated that 59 percent of all U.S. florists were members of FTD; these florists accounted for about 84 percent of the total dollar volume generated by U.S. retail flower shops [FTD, 1977]. FTD's leadership in the wire service field must be attributed at least in part to its longevity (FTD was founded in 1910 [Williams, 1960]), its advertising and resulting consumer recognition (FTD reported a \$12 million-plus advertising budget for the 1982 fiscal year [Anonymous, 1982a]) and its member services. Such characteristics greatly exceed those of FTD's competitors.

The fairness of competitive behavior issue transcends the various levels of the cut flower subsector and relates to the many business practices generally used throughout the industry. Grades and standards, for instance, would be used throughout. However, the lack of uniformity relating to their current implementation in the industry causes one to pause and ask whether or not their random application is fair. Rhodes and Kiehl pointed out in 1956 that economists have considered grading essential in facilitating competition. Similarly, one might ask whether the lack of knowledge of a flower's date of cut by a retailer or wholesaler unduly benefits those who previously handled the product in the market channel (see Miller [1981]). Certainly the failure to pay one's suppliers promptly would be considered unfair behavior by many (see Langefeld [1982]). Such issues assuredly affect the competitive

climate in the industry; perhaps more importantly, their presence probably contributes to a certain amount of industry turmoil, without which the industry would certainly be better off.

#### Numbers of Entries and Exits at Different Stages

One of the assumptions of perfect competition requires the ability to enter or exit the industry freely. With historical data on the specific firms in an industry over time, industrial organization economists are able to gauge the probabilities for firms of a given size either to grow or to leave an industry. A Markov transition matrix would then depict probabilities for finding the various industry operations at particular defined market share levels and the chance that such a firm would grow or perhaps move to a zero market share level, i.e., exit the industry. Unfortunately, such data are unavailable for the cut flower industry. However, some data do exist which will show firm exit or entry at the grower, wholesale, retail and wire service levels of the industry.

Table 4-5 depicted the number of producers involved with each of the major cut flower species. Of those species for which data are available over the 25 year period of the table, all had experienced a decline in the number of domestic growers, although the number of hybrid tea rose producers remained fairly stable from 1976 to 1980. It should be noted that the table does not indicate firms going out of business; the only indication is for a decreased involvement in the production of the listed cut flower species. However, data from the 1969 and 1978 Censuses of Horticultural Specialties [U.S. Bureau of the Census, 1973, 1982] do confirm a reduction in the total number of cut flower

growers over time. The 1969 Census reports that there were 7,969 farms raising cut flowers in 1970, a decrease of 3,803 firms (32.3 percent) from the 1959 tally. In 1979, there were only 3,900 establishments raising cut flowers in the U.S. This represents a decline of 51 percent since 1970 and a drop of almost 67 percent from the 1959 level.

Firm entry at the grower level does occur (Appendix A). Yet, the investments required and other deterrents, as discussed earlier in this chapter, probably make firm entry at the grower level far less likely than firm entry at other levels, or for that matter, firm exit.

At the wholesale level of the industry, data from the 1972 and 1977 Censuses of Wholesale Trade [U.S. Bureau of the Census, 1976, 1979] do indicate some firm movement. Among merchant wholesalers, there was a net gain of 359 firms between 1972 and 1979 (an 18.2 percent gain). Of the 1,974 establishments in operation at the end of 1972, 1,880 had operated the entire year and 94 (4.8 percent) had not operated the entire year. (Those not operating the entire year but still in business at year end include new entrants and firms which have periods of seasonal inactivity.) On the other hand, the 1972 Census of Wholesale Trade reports that there were 75 firms not in business at the end of 1972.

Census data from 1977 are equally informative. There were 2,333 merchant wholesalers at year end, of which 2,083 (89.3 percent) had operated the entire year and 250 had not operated the entire year (firm seasonality or firm entry). In 1977, there were also 114 firms which were not in business at the year's end (firm exit) [U.S. Bureau of Census, 1977 Census of Wholesale Trade, 1979].

At the retail level, the 1972 and 1977 Censuses of Retail Trade [U.S. Bureau of the Census, 1976, 1978] supply equivalent data. In 1972, there were 24,464 retail florist shops at year's end. Of these, 22,465 (91.8 percent) had operated the entire year and 1,999 (8.2 percent) had not operated the entire year. Another 2,061 firms which had been in operation in 1972 were no longer conducting business by the year's end.

By 1977, there had been a net gain of 4,911 establishments to the ranks of retail florists, a gain of about 20 percent from 1972. The 1977 Census of Retail Trade [U.S. Bureau of the Census, 1978] reports 29,375 firms operating as retail florists by the end of 1977; of these, 24,746 (84.2 percent) had operated the entire year and 4,629 had not operated the full year. Another 3,341 firms that had been in business in 1977 were not in business at year's end. Both firm entry and firm exit appear more prevalent at the retail level of the industry than at the wholesale level. It should be noted that the 1970s saw a tremendous increase in numbers of plant shops and boutiques. It has been hypothesized by some that the rapid rise in retail flower shop numbers reflected in the data may be in part a response to the popularity of foliage plants during this period, rather than a true rise in the number of full-service flower shops.

Finally, one should address entry to and exit from membership in the wire services. In an article originally appearing in the July 14, 1981, issue of the Miami News, author John Doussard quoted an FTD official as saying that about 5 percent of the member florists tested by FTD's test order program fail the test on their first attempt. By repeated failure, this results in about 200 to 400 firms which get

suspended or terminated each year by FTD [Doussard, 1981]. This would represent perhaps 1 to 2 percent of the estimated FTD membership (in 1982) of (over) 20,000 florists [FTD, 1982c] which are forced to leave FTD. It should also be noted that this does not speak about any voluntary exit from the organization which may occur.

As for membership entry, FTD shop memberships totalled 17,690 at the end of 1980. This was a rise from about 15,000 in 1976 (about an 18 percent rise) and would indicate an approximate rise of 13 percent to a mid-1982 level of 20,000 florist shops [FTD, 1982c].

As for entry into the wire service arena itself, this too does occur. Since 1970, no fewer than five wire services have been formed, including one which caters to mass marketers. These firms have been able to draw members from the flower shop ranks. Included among the recent entrants are American Floral Services, Florists Clearing Network, Insta-Floral, Inc., Trans American Floral and Masterfloral Flowers-by-Wire.

In summary, one would have to conclude that the cut flower industry as a whole operates on a generally competitive level. At the grower level, firm entry is plagued with all of the problems typical of establishing oneself in any form of agriculture. Also similar to other types of agriculture, firm exit is probably more prevalent than firm entry. Competition now stems from foreign as well as other domestic operators. The result is probably survival of the fittest.

At the wholesale and retail levels of the industry, competition for the client's floral dollars is probably on the increase with the relatively recent entries of importers, shippers and mass marketers. The wholesale level, although much more concentrated than the retail

segment, faces increased competition from non-traditional market channels as well. Traditional retailers now must cope with mass marketers who are increasingly responsible for more of the consumer's floral sales dollars. Hence, one may conclude that industry competition at all levels of the market channel is on the rise; however, the competition may be derived from a non-traditional source or a variant of a traditional competitor.

#### Causes of and Degree of Conflict within the Subsector

The section on coordination within the subsector in Chapter VI noted several conflicting issues and conflicting market channel members which present some problems with coordinating the subsector. Many of these issues return as the focus is changed to examine problems relating to the behavior and performance of the subsector. There will be much overlap by necessity, as coordination is a key to performance. However, in this section the emphasis will be placed on how the conflicting issues affect the industry as a whole. This review of some of the key conflicting issues will help to introduce the section of this chapter which follows that investigates changes in the organization and performance of the subsector.

Risk is always an area of conflict, especially when money is involved. In any market channel involving the handling of a perishable product, risk is involved at all stages of the system. The cut flower industry is no different. Operators anguish between the thought of having too much product, such that some gets thrown out unsold, and having too little product, such that sales are missed due to lack of inventory. As part of this debate, the question of allowing the

previous market channel participant to take the loss, if there is to be one, surfaces. On the other hand, suppliers often resent clients practically living out of their warehouses and coolers with only small orders being made on a very frequent basis. Unfortunately, this conflict often surfaces during periods of low market activity, as it is during these times when all must be cautious with inventories and during this time when losses can mount very easily (Appendix A). The elimination of the constant peak and valley movements of market activity would certainly bode well as far as risk reduction and conflict reduction are concerned. Eliminating or reducing the fluctuations in market activity would probably ease uncertainties to the point where operators could either place advance orders for product, hence spreading the risk, or perhaps even place standing orders, which might eliminate most of the risk. Performance would definitely be improved.

The changing market structure is also a source of conflict. Whether they be non-traditional merchants, importers or the imported product itself, non-traditional elements of the market channel often receive the brunt of the criticism. Those operators who are losing market share or who face reduced opportunities in light of competing product often promulgate a large portion of the tension. This is probably human nature. Yet, there are elements of the traditional cut flower distribution system which are responsible for part of the currently changing market channels and, to a certain extent, the associated tensions that are generated. Many growers are now bypassing the traditional wholesalers and selling directly to both traditional and non-traditional retailers, as discussed in Chapter VI. This brings some operators into conflict with others [Gillette, 1980]. Others justify

such moves as an effort to protect investments [Mitchell and Shibata, 1975].

When new market channel forces have begun operating in an area, the tension often peaks. Sullivan et al. [1980, p. 58] reported that traditional operators have often responded with threats of business boycotts. In such cases, the new market channel members are often forced to operate without local suppliers, hence creating hostilities that sometimes last long after the changes in the market channel have been made. Nevertheless, it is in these beginning stages of change that traditional operators feel the most threatened, and it is at these beginning stages that the degree of conflict is usually the greatest. After market adjustments have been made, the conflicts often subside although the animosities often remain.

In a similar vein, traditional channel participants have often been at odds with one another over the issue of imports. Domestic growers have fought increased import levels. Retailers have often sided with importers in an effort to assure product availability [Nicholas, 1980b]. The presence of imports in the marketplace is definitely having an effect on market structure. The additional supplies themselves have potential to change behavior and performance depending on whether imports act as substitutes for or complements to domestically produced goods. Acting as substitutes, the ability of one country or group of importers to dominate supply channels may adversely affect a free market system. As complements to domestic supplies, imported product could increase competition.

The issue of grades and standards again surfaces and with it the question of product dating. As cut flowers are undeniably perishable,



questions surrounding a supplier's or a recipient's integrity often surface when product does not meet one's expectations and/or when credit for poor merchandise is sought (Appendix A and Langefeld [1982]). Institution and adoption of industry-wide grades and standards and/or product dating would undoubtedly help to alleviate some of these conflicts. Performance with regard to product perishability would also be improved.

The level of conflict stemming from the grades and standards debate is variable. In travelling around the U.S. to view the cut flower industry, this author found many who claimed that the grades and standards issue was dead. Some just laughed and asked, "What grades and standards?" Yet, in many instances, one could sense a deep resentment towards competitors and suppliers who marketed less than satisfactory product. It appeared that the degree of conflict caused by the grades and standards issue often depended on the general level of product quality in the local market and perhaps on how tight market supplies had been (Appendix A).

A perhaps related issue surfaces when one hears arguments about product prices. As in any supply channel, suppliers will argue that they do not receive sufficient compensation for their produce, and recipients will charge that prices are too high for the quality received. Adequate grading throughout the industry would likely establish a hierarchy among available products. Both suppliers and recipients could then be assured that the prices were in line with product qualities.

Yet, some of the discussion of product prices revolves around the entire pricing structure in the U.S. cut flower industry. Many charge

that the traditional floral industry operates at an artificially high price level (Appendix A and Harris and Teitelman [1982]). Often the retailer is blamed for this (Appendix A). Increased competition, whether surfacing from more aggressive "traditional" retailers, mass marketers or some of the new entrants in the industry should help to control any price anomalies that may be present in the system.

Another issue confronting segments of the industry, but which has more potential for volatility than has thus far been demonstrated, concerns the product. Some have charged that traditional retailers have lost sight of the cut flower product itself. Instead it is claimed that retailers sell service and have only incidently concerned themselves with flowers. This may be true for the majority of retailers; some would even profess that any other attitude would be inappropriate for the retail segment of the industry. However, many mass marketers and some other new market entrants have focused solely on cut flowers themselves and have shunned the oft-associated services. Sometimes this has made these non-traditional retailers the subject of ridicule with statements referring to one's being a "bucket shop" and the like. Occasionally, these non-traditional outlets have been the brunt of even greater controversies (see Knable [1982] or Young [1982b]) or court proceedings (see Morse [1981] or Kent [1981]). Again, the increased competition in the marketplace will likely create many new variations in how merchants sell flowers and/or the associated services. "Bucket shops," roadside merchants and others will probably increase in numbers as dealers try to spur flower consumption. The controversies will likely persist.

Another area of conflict has been industry advertising and promotion practices. For years, retailers have been claiming that they were practically alone in industry advertising endeavors. This claim was based on the expenditures of retailers as individual shop owners and for the combined expenditures of FTD. Except for the efforts of the Society of American Florists (SAF) through its American Florists Marketing Council (AFMC) and some scattered efforts by others, this was not far from true. Florists were quick to point out that manufacturers and processors in many other industries, including other agriculturally related fields, often helped with product promotions.

Today, this issue has evolved into one that is creating even more conflict. The Society of American Florists has proposed and the U.S. Congress has passed enabling legislation for the establishment of a Floraboard, an industry promotional board. The Floraboard controversy will probably be argued for years, no matter which way the industry referendum slated for late summer 1983 is decided. At issue are arguments claiming Floraboard as an industry "savior" as well as those that claim it only a case of government interference into the private sector. Floraboard will be discussed in greater detail in the next section of this chapter.

These issues are not alone in their conflict-generating capacities. The lack of communication itself often generates considerable conflict [Langefeld, 1982]. Improved communication between operators at all levels of the industry would likely improve industry behavior and performance considerably.

### Forces Causing Change in the Organization and Performance of the Subsector

Sometimes working in concert with and sometimes working at odds with one another in the U.S. cut flower industry are many forces which are causing change. These forces, at times, take the form of people or formal organizations or committees. Occasionally these forces would perhaps more appropriately be called "factors" or "themes" that have been promoted by people, groups or committees. And in some cases, these forces may be more likened to sleeping giants, as they have thus far only amassed the potential for creating change or have, up until now, only used a fraction of their potential strengths. This section will examine some of these forces. The order in which they are presented should not be construed as denoting any rank of importance as either a force for change or in level of potential impact. The discussion should not be considered complete.

#### The Wire Services

The wire services, both collectively and individually, represent tremendous forces for change in the industry. The wire services represent the links which tie retailers together nationwide. Their force is probably exceeded only by their often unused potential.

First, it should be noted that the wire services have tremendous capabilities in product marketing. These abilities are probably most noted at holiday times when the wire services heavily promote themselves as a means of sending flowers nationwide. Often the holiday itself is promoted by the collective efforts of the wire services. As a link connecting retailers nationwide, however, the potential marketing

capabilities have probably been relatively unused. Some of this, no doubt, is due to the fact that the service with the greatest membership and the greatest potential, Florists' Transworld Delivery (FTD), has been repeatedly sued by other services and by the U.S. Justice Department for restraint of trade.

Product marketing of both flowers and hard goods by the wire services represents a significant change in the industry from when only concepts for flower arrangements were promoted. The relatively recent introduction of hard goods marketing probably does more to identify all of the wire services as promoters of uniform products than had been the case previously. As such, it may be argued, the wire services to a great extent decide or at least greatly influence what the public (at least that part of the public that uses wire services or which refers to wire service catalogs for ideas for local orders) gets. The potential for even more involvement in the inventories of retailers is probably even greater, especially in the light of computer link-ups which directly tie shops with an association's headquarters.

Certainly other marketing and business methodologies could be effectively promoted through the wire services. Already some services offer various bookkeeping features. Various wire services conduct research aimed at improving members' fortunes. Opportunities for the wire services to provide educational programs abound.

The wire services should also be recognized as forces in their own rights. The greatest bulk of industry advertising of any kind to date has been directly the result of the wire services' efforts. FTD, in particular, probably does more industry advertising than all other organizations put together. FTD also contributes heavily to the efforts

of others, e.g., the Society of American Florists' American Florist Marketing Council (AFMC). As a representative of so many retailers, the wire services, (again) most notably FTD, often present the views of their constituents before government agencies on issues ranging from imports to tax matters to the proposed Floraboard marketing initiative. The wire services definitely represent a force with which to be reckoned.

#### The Society of American Florists and Other Organizations

The Society of American Florists and Ornamental Horticulturists (SAF) and other organizations, e.g., Roses, Inc. (a rose growers organization), the Wholesale Florists and Florist Suppliers of America (WF&FSA), some of the allied florists associations, etc., also represent forces in the industry. Many of these organizations conduct industry surveys or research or sponsor programs that do so through various grants or endowments. In the case of SAF, the media and government are monitored, and views favorable to the industry are represented. The Society of American Florists' American Florists Marketing Council (AMFC) promotes flowers, sponsors flower giving occasions (e.g., National Secretary's Day and Week and the "Friday Flowers" program) and is sponsoring the proposed Floraboard advertising, promotion and research board through the Floraboard Development Committee. The SAF also sponsors the Florists Information Council (FIC) which tries to smooth relations between florists and the funeral industry and tackles issues such as removing "Please Omit"'s from obituary columns. Roses, Inc., has on numerous occasions petitioned the U.S. International Trade Commission on behalf of its member rose growers to control imports through tariffs or quotas. Several local allied florists associations

have had tremendous impacts on local levels. Some "allies" have been responsible for delivery pools, promotional programs and even coordination of events such as parades, fund raising events and programs to counter "Please Omit"'s [Nicholas, 1982a]. If ever unified in their efforts (often they are not, due to their representation of multiple facets of the industry which have conflicting views--see Chapter VI), the various industry organizations could collectively represent a formidable power.

### Floraboard

A potential force of great consequence is Floraboard, the proposed floral advertising, promotion and research board that is currently under review by the industry. If passed by a grower referendum (slated for mid-1983), Floraboard has the capability of pumping at least \$5 million annually into the advertising of flowers and plants. (In comparison, the American Florists Marketing Council (AFMC) currently has about a \$2.5 million budget per year [Sharoff, 1981].) If growers and importers fail to ratify the proposal, debate over industry advertising will likely remain a prominent issue.

Whether it passes or fails, Floraboard already must be considered a force in the industry. For instance, Floraboard has already divided much of the industry into proponents and opponents of the measure. Those favoring the measure suggest that the best way to create demand is to unite all efforts under one program and that Floraboard represents an idea whose time has come [Endo, 1982]. Opponents argue against government involvement in private industry (needed to oversee the program to prevent any illegal activities) and make claims to the

effect that the industry is already as good as it has ever been [DeFiglio, 1982].

Too, Floraboard already is and, if passed, promises to be even more of a force monetarily. Several groups and individuals already have contributed time and monies to the Floraboard Development Committee [Anonymous, 1982e; Young, 1982a]. Furthermore, if ratified, Floraboard will initially assess handlers 0.5 percent of the price of flowers or plants at the first point of a flower's sale minus the cost of plant material. After two years, this rate may be increased (or decreased) by no more than 0.25 percent per year with a maximum rate of 1.5 percent per year [Floraboard Development Committee, 1982]. Hence, the financial impact of Floraboard may be great.

Floraboard may also have an impact elsewhere. Floraboard is a proposed research and promotion act. Therefore, the possibility exists that some valuable industry research may be conducted. There is also the possibility that Floraboard may affect other promotional investment decisions made by other industry members or groups.

Yet, the biggest impact that a Floraboard-type program might have must be considered the possibilities for market expansion. Ward et al. [1983] note that the common objective of advertising programs is to enhance commodity sales and distribution. Enhancing commodity sales would definitely help the cut flower industry; improving the distribution system would also be considered valuable assistance, especially for a perishable commodity. A program such as Floraboard is considered one for generic advertising. Ward et al. [1983] point out that generic advertising, as opposed to brand advertising, is more directly aimed at market expansion. Flowers, as are most foods, must be



considered experience goods rather than search goods. Experience goods are defined as products with purchase cost and durability such that the consumer will try new products, recognizing that an incorrect decision is not of major importance. Generic advertising is considered most effective for such experience goods. Consumers are considered likely beneficiaries of such generic advertising programs as well because of the increased information provided. For a product group where over one-third of the public does not currently purchase flowers in the course of a year (Chapter VI), such a program could be of major consequence.

### Imports

Imports have definitely had a great effect on the U.S. cut flower industry. However, the history of imports in the 1970s may only portend their future effect on the industry in the years to come. It was shown in Chapter IV that imports now play a dominant role in the supplies of several cut flower species (Tables 4-9 through 4-13). The trend is expected to continue due to the decline in numbers of domestic growers.

However, the data of Chapter IV do not reveal all of the consequences of imports. The majority of cut flower imports currently arrive from Colombia through Miami (Table 4-14). This concentrated influx has to a great extent dampened the Florida cut flower growing industry [Gause, 1982] while developing a large flower trade center. Now, however, imports are beginning to mount from other countries, and the entry point is often a city other than Miami. Holland, for example, nearly quadrupled its exports of cut flowers and potted plants to the U.S. between 1978 and 1981. By 1985, the Dutch are predicting exports

to North America valued at \$50 million, more than 10 times the 1978 level of \$4.21 million. The Dutch export flowers directly to at least five major U.S. cities. The variety of flowers available from Holland is quite enormous [Gillette, 1982], both because of the varied Dutch production and because the Dutch markets act as crossroads (i.e., central distribution points) for flowers produced all over the world. Israel, too, exports much to the U.S., and its major port of entry is New York City. The level of Israeli imports had risen from \$18 million in 1975-76 to over \$78 million in 1978-79 [Besemer, 1979]. Many other countries are now entering the import picture as well, and the varieties of flowers imported and the effects of the import activities on local and national economies are sure to broaden.

The effects these imports have had, will have and could have are far reaching. The imports, for instance, have modified the market channel structure, as many shippers have entered the system specifically to handle the flow. (Often these shippers are affiliated with foreign growers.) The potential for market turbulence, should something occur to impede this flow, is enormous.

Imports have obviously had an effect on the domestic growing industry. The presence of alternative supply sources has forced many growers to seek different market opportunities. Many growers have left the industry; remaining growers have been forced to be both more prudent and more competitive in their operating procedures.

The effects of imports have also indirectly touched the wholesaler, the retailer and others in the industry. Imports are usually shipped dry, and this has had some effect on the way flowers are handled. Importers were the first to promote the use of silver thiosulfate and

other post-harvest methodologies which materially lengthened flower life. The influx of imports has had an effect on transport services, even within the U.S., e.g., the Florida based floral trucking industry has located offices near the Miami airport. The industry's morale has been affected by imports as well, as growers, wholesalers and retailers have been on opposing sides in several U.S. International Trade Commission hearings. (Growers argue for import relief while wholesalers and retailers argue for greater supplies to keep prices lower [Nicholas, 1980a; Voigt, 1980].)

In summary, imports (along with transportation and other factors) have to a certain extent internationalized the U.S. cut flower industry. Cut flowers, from the basic to the exotic, can hail from anywhere in the world. At the same time, imports have affected the domestic industry to the point where the possible occurrence of an international crisis could spawn significant reactions within the domestic industry. It has been reported that the markets already noticeably respond to swings in international supplies and demands (Appendix A). The trends in imports will likely accentuate such occurrences even more in the years to come.

### Mass Marketing

Perhaps as big a force in the industry as is anything is the development of mass marketing of floricultural products. Although some supermarket sales of floricultural products have occurred for several decades [Anonymous, 1971], the major trend of supermarkets widely carrying these items must be considered a more recent phenomenon. A 1960 bulletin entitled Selling Flowers in Supermarkets is the first known (to this author) study on the subject [Zawadzki et al., 1960].

The trade press, however, was not inundated with articles on mass marketing until the early to mid-1970s [Miller, 1977]. Since its inaugural period, the mass marketing of floral products has increased markedly to the point where over 95 percent of chain store supermarkets now carry floral products [Kress et al., 1983], and supermarkets registered 8 percent of the total floral sales dollars and 15 percent of the total unit sales for the 1976-1980 period [Buckley, 1982]. If one were to include discount and department stores among the mass marketers, then the share that this movement can now claim must be considered at least to have doubled since the 1976-1980 period [The Floral Index, Inc., 1981]. The trend definitely points upward.

The impetus for mass marketers to carry floral products has been one of profits. Marketers have often been attracted to floral items by their high gross margins (as much as 50 percent), especially in light of margins which are considerably lower for groceries and other food categories (e.g., meat, produce, dairy, etc.) [Miller, 1977]. The ability to attract consumers to buy flowers while they are largely shopping for other products can be considered a motive of these mass merchants.

Yet, as noted in earlier chapters, cut flowers have not always achieved the success of other floral products in the mass market arena. Mass marketers regularly account for only about 10 percent of cut flower sales [The Floral Index, Inc., 1981]. Only about 23 percent of those supermarkets handling floral products carry cut flowers on a regular basis; another 15 percent inventory cut flowers on a seasonal basis [Kress et al., 1983]. Hence, the potential exists for further involvement.

As a force in the industry, the mass marketing of cut flowers must be reckoned with. Initially carrying only bunches of flowers, mass marketers are now often delving into full-service operations (Appendix A). Some supermarkets have joined wire services. One firm has even been formed to cater to wire service needs of mass marketers [Mills, 1981]. Attempts by traditional wholesale operators to avoid getting involved with mass marketers (perhaps because of threats by traditional retailers) have often proved self-defeating [Sullivan et al., 1980, pp. 56-60]. As noted earlier, mass marketers have frequently been responsible for altering the standard business practices of many growers; advance and guaranteed orders were often sought and received. Mass marketers have also repeatedly been the center of controversy in the industry.

However, the real force in the mass marketing movement must be considered the potential that mass marketing has to reshape the domestic flower industry, this largely due to the impulse nature of the mass merchandising strategies. The vast expansion in flower consumption throughout much of Europe that has occurred in the post-World War II era has been attributed to the development of an impulse market. The impulse market in West Germany now accounts for between 75 percent and 80 percent of the floral sales and is served largely by non-traditional retailers [Storck, 1979]. A previous work by this author suggests that a similar response might occur in the U.S.; responding to questions about increased availability of cut flowers in supermarkets, about 75 percent, 72.5 percent and 64.1 percent of the respondents, respectively, indicated a likelihood for increased consumption for (1) gifts of friendship, (2) special occasions and (3) personal use/

decorative purposes around the home [Miller, 1977]. The "jury may still be out," but the potential is definitely present. In the least, one must admit that mass marketers have created a greater awareness of floricultural products among much of the consuming public.

### Energy Shortages

The Arab oil embargoes of the 1970s changed the energy consumption habits of many Americans. Operators in the cut flower industry were often hit hard and sometimes were quickest to change. Some operators altered their energy consumption by employing conservation mechanisms; others were forced out of business. The effects of the energy shortages were felt and to a great extent still are plaguing operators at all levels of the industry.

At retail, the biggest concern of most operators was for delivery of orders. Many allied florist associations and other florist cooperatives sponsored delivery pools. In many cases, retailers began to limit their delivery areas, and almost all florists instituted a delivery charge for all or at least some of their deliveries and/or developed minimum order policies (for purchase amounts). In especially large cities, some florists increased their use of the wire services by making some orders for delivery across town (that they had previously handled) the responsibility of another wire service member (Appendix A).

Wholesalers were not immune to the energy problems, either. As freight costs increased, many scrambled to locate other nearby operators to arrange for pooled deliveries from suppliers or to customers. Others re-evaluated their own delivery policies as well; route operators often

curtailed service to distant florists. Delivery charges and/or minimum orders also were established by some wholesalers.

The grower, however, often felt the brunt of the energy crisis. Not only did the grower face increased costs for getting product to market, but the grower often faced quickly rising production costs for heating, lighting and other energy-demanding factors. The results of higher energy costs were multi-faceted. Product prices for both inputs and outputs often rose. Some growers were forced out of business, while others put aside cut flower production for crops that yielded higher returns.

Conservation techniques also began to flourish. Multi-layer polyethylene glazing became highly touted as the most energy resourceful covering. Some growers even put layers of polyethylene over their glass greenhouses and all rushed to seal leaks and fill in cracks. Many northern growers added walls of styrofoam or similar insulation to foundations and sometimes covered their entire northern walls. Analogies depicting dollar bills floating through greenhouse cracks underlined the urgency for these techniques.

Other methodologies for reducing total production costs or costs on a per unit basis were adopted. Heat blankets, drawn over crop beds and benches at night, were implemented by many (Figure 3-6), as growers strived to find ways of heating only the plant space rather than the entire greenhouse. Alternative fuels, including wood chips, saw dust and geothermally heated water (geothermal wells) were tapped. Some growers replaced their crop benches with rolling bench systems to reduce space needed for aisles and walkways. In at least one case, a northern grower reverted to use of solar heat for part of his rose crop,

virtually eliminatng a Valentine's Day cutting from the affected range (Appendix A).

The energy crunch also had a demoralizing effect on many northern growers, as it served to underline the previous moves of many fellow operators to areas of the Sunbelt. Growers in the southern states obviously had an advantage on heating costs. This had led to an earlier shift of production sites for many crops, as growers had moved to warmer climates. Now, however, the advantages received by growers situated in the tropics or in other areas, where little if any heat was required, were only emphasized by the higher fuel costs. By shipping dry and packing cut flowers very economically, the increased transportation charges of distant growers were more than offset by the savings on their heating bills. Furthermore, growers suddenly realized the perilous nature that they were in when someone suddenly turned off the oil spigot. Energy shortages have certainly changed the industry. Their effects will continue to be felt.

#### Transportation and Freight Handling

Although the cut flower industry was and continues to be changed by the energy issue, transportation and freight handling methodologies, fuel costs aside, have also been a source of transformation. The development of air freight systems for handling cut flowers was probably the impetus allowing growers to locate in more profitable growing regions and ship their produce to market. The Interstate Highway System also provided an impetus for operators to move to areas not necessarily immediate to their customer base. Air and truck freight certainly have



revolutionized the industry from the days when most of the cut flowers were grown in the proximity of the florist who bought them.

The Society of American Florists in its 1981 Transportation Survey of Floral Wholesalers and Shippers estimated that the average wholesaler or shipper spent \$47,000 on air freight in 1980 and \$38,500 on truck freight. This reflected a turnabout from the previous year when trucking had dominated air freight. Minor expenditures were also recorded in 1980 for use of busses, Amtrak, the U.S. Postal Service, specialized couriers and others [Society of American Florists, 1982b].

The recent deregulations of the air cargo and trucking industries may again alter the subsector. Increased competition among haulers may change the above distribution of carriers used. The typically small operator in the industry may be at a distinct disadvantage when it comes to finding the lowest rates for shipping produce; part of the deregulation has eliminated the requirements for carriers to file and observe tariffs. There is also some fear in the industry that small operators may be left without protection from arbitrary practices or damages from shippers [McEwen, 1980].

Transportation changes have, of course, revolutionized the way the entire world operates. However, in the cut flower industry, where the perishability of the product is of paramount concern, it is an efficient transportation and freight handling system that assures the industry's viability. Transportation and freight handling improvements have allowed the majority of the domestic industry to change to Sunbelt production locations. These improvements, moreover, have allowed for the influx of imports by assuring their arrival in saleable condition. But, it has also been such modifications that have allowed the U.S.

floriculture industry to become part of the world market and assume its roles as supplier of some items, e.g., cut greens and some foliage, and as consumer of greatest potential.

### Post-Harvest Physiology

Advances in post-harvest physiology have modified the industry and promise to continue doing so. The advantages of longer shelf-life for both product handlers and final consumers are obvious. The lengthening of this vase-life and the reduction of product shrink are the goals of post-harvest physiology. Success in achieving these goals would have a marked effect on the industry if one assumes the estimates of Sullivan et al. [1980, p. 406] of a 20 percent shrinkage rate in the floricultural industry to be correct.

Researchers have learned much about keeping quality. Sullivan et al. [1980, pp. 406-415] estimate that approximately 70 percent of the post-harvest characteristics can be pre-determined at time of harvest. Researchers have noted that production factors such as plant genetics, environmental surroundings and methods of crop management all affect flower longevity. The time of the year and time of the day, the stage of maturity, the distance to market, customer characteristics and consumer demands can all influence vase-life as well. Research in these areas continues.

Receiving much attention are the truly post-harvest factors. The effects of the presence of ethylene gas on various cut flowers have been well documented, e.g., sleepiness of carnations and dry sepal injury to orchids. Research on bacteria, fungi and other pests contracted during marketing has been and continues to be conducted. Optimums for

temperatures and relative humidities for many species have been noted [Sullivan et al., 1980, pp. 419-423].

Perhaps the post-harvest subjects receiving the most publicity in the trade press are those that require some active participation on the part of flower handlers. The use of preservatives and other additives is one such area. Various life-lengthening additives have been focused upon in recent years, including 8-hydroxyquinoline citrate and sucrose (common ingredients for several commercial flower preservatives) and silver thiosulfate (STS). Silver thiosulfate, for instance, has been shown effective when used in combination with commercial preservatives in lengthening carnation vase-life from six days to as many as 21 days [Reid, 1982]. Staby et al. [1981] showed that the SuperCarnation from Riverdale Farms, Inc. (Miami, Florida), which is treated with some proprietary STS-like formula, lasted significantly longer than untreated carnations and longer than regularly STS-treated carnations. The carnations with the most longevity were SuperCarnations used with commercial flower preservatives.

Other active procedures have also surfaced. Forced air cooling is now prevalent in California and at the Miami import center (Figure 6-1); such cooling rapidly lowers product temperature and has been used mostly in advance of truck shipments. Use of deionized water (as opposed to tap water) has been found beneficial, and employing deionized water in conjunction with preservatives and/or other treatments has proven most effective [Sullivan et al., 1980, pp. 427-428]. Sterilizing flower storage containers has also been shown to help prolong flower life.

Hypobaric storage offers great promise but has not yet been proven economically feasible. This methodology proposes storing cut flowers

for long periods, perhaps several months. The possibilities of producing flowers during periods of lower energy use and holding them for sale during times of peak demand provide great inspiration for researchers in this area.

Collectively, the advances in post-harvest physiology over the past several decades have had a great impact on the industry. The ability to "hold" flowers in a saleable state for relatively long periods (compared with previous times) has allowed other forces, e.g., imports, transportation and freight handling, moves to Sunbelt regions for energy conservation, etc., to work in concert in making the industry more efficient. Longevity of flowers has been voiced as a chief concern of consumers [Howland, 1981]. As such, the industry's efforts are probably justified; as even further advances are made, the industry will hopefully be more than compensated by improved performance of both the industry itself and the product it handles.

#### Changing Market Channels

Change often breeds change, and the changing market channels have acted as such a force in causing further modifications in the organization and performance of the subsector. The distribution system has often experienced transformations as a result of some factor, e.g., imports or mass markets; the initial catalyst has sometimes bred further change. As operators witness the successes (or failures) of ventures undertaken by others, they are often intrigued into attempting similar experiments, particularly if advantages are seen or improvements upon another's attempts are forecasted. These movements often act as the adoption phases of any market innovation.

Hence, as wholesalers or growers observed the successes of fellow operators in their initial workings with mass marketers, many made similar contacts. When some realized benefits in spite of threats of boycotts by traditional retailers, even more followed suit. Today, many operators deal almost exclusively with mass marketers, and traditional dealers in some locales seldom take notice.

Similar moves may be occurring in the traditional distribution system of the industry as some firms have begun bypassing the wholesaler. Prince and Robertson [1982] noted that even though the primary avenue of rose distribution is still from grower to wholesaler (45 percent of producers used this route), 52 percent of the firms they surveyed sold all or part of their produce through retailers (20 percent sold primarily to retailers while 32 percent used a combination of wholesale and retail outlets). This author witnessed several instances of growers and retailers bypassing middlemen in response to the successes of neighboring operators (Appendix A).

Vertical integration as discussed in Chapter VI is the result of the bypassing of the traditional channels of distribution. As such, "bypassing" is a misnomer, as firms really just absorb the functions previously handled by others. The result of such action is often a larger firm with more diverse functions. Others may be forced into similar moves to remain competitive. If such integration then becomes a widespread phenomenon, the industry eventually becomes composed of firms which are less specific, not only in their functions, but also in their product line. Diversification has thus become a marketing tool. Greater competition and subsequently greater technical efficiency often

result for the industry as a whole, this according to hypothesis H12 of Chapter II. In summary, change breeds change.

### Other Factors

There are many other factors that could be cited which have had or do have the potential to affect the industry. Exclusion from mention does not demean their importance. There are some forces, however, which at least deserve special note. The effects of some of these are not always known nor immediately obvious. In some cases the stories are as yet incomplete.

Among these is the economy or general business atmosphere. Obviously the economy plays a big role. During depressed economic periods, a struggling firm often faces extinction. Expansionary periods can help some less than efficient firms mask periods of floundering business practices. High interest rates can make the borrowing of operating, expansionary or founding funds realistically impossible; they may also affect the selling of a firm or effect foreclosure. Inflationary or deflationary spirals will naturally influence product and input costs, and employment levels may prejudice the public's willingness to buy. An economy's health may also determine a government's attitude toward trade. Truman Fossum [1979] has depicted business cycle relationships for commercial floriculture in the U.S. He showed that past contractions in the general economy have sometimes had an effect on consumer expenditures for floriculture and the sales of retail florists (including numbers of orders and their average value).

Centralized production in the Sunbelt region of the United States has also been a force of change in the industry. As already noted, this

has affected energy consumption and transportation, but it may also influence other parts of the ornamental horticulture industry. For instance, the types of and numbers of greenhouses used may be altered by reduced reliance on heating fuels. Transportation needs may be redefined as growers concentrate in certain areas and/or as distance to population centers changes. The floricultural staffs of many universities and extension services may be reduced in some parts of the country and expanded in others. The labor forces of floriculture may equally be altered, as may the utilization patterns of other resources. Local economies will necessarily be touched in both the states with receding floricultural industries and those with progressing industries.

Another phenomenon which certainly will have an effect on subsector organization and performance is the growing use of computers. Some of these effects have been noted in the discussion on wire services, as wire service order transfers have already been linked to a central processing center via computer terminals for the major organizations. However, computerization of the business world will play a role in production. Modelling has enabled some growers to plan better production processes. Computer aided equipment has also allowed some firms to program the entire progress of a crop including, among others, the transplanting, fertilizing and watering schedules. Thus, computers have the potential to affect the size of the labor force. The day may not be far off when many more firms have undergone such "computerization."

Competitive products can always surface which may sway the consumer's interest in buying flowers. Sometimes such products can be easily incorporated into a flower shop's inventory or even into a flower arrangement. Wine and balloons provide two recent examples.

However, it is conceivable that some other product may "catch the fancy" of many consumers and find the cut flower industry totally off-guard. (The U.S. auto industry learned such a lesson the hard way in the 1970s.)

Much can happen.

### Summary

Past and present industry events and a review as to how they have affected the behavior and performance in the subsector have been examined in Chapter VII. Inventory and risk management practices, pricing, the value added and profits at different stages were outlined. The progressiveness at each stage of the subsector as it related to the product, the production process throughout the market channel and the innovations in the organization and coordination of the various levels of the subsector were described. A discussion on the extent to which supply offerings of sellers matched demand preferences of buyers was highlighted with the results of several surveys. The equity with which risks, rights, responsibilities and returns are distributed in the subsector and the competitive environment, including the balance of market power, the widening or narrowing of markets, the access to and/or foreclosure of markets, the equality of market information, the fairness of competitive behavior and the numbers of entries and exits at different stages were presented. The chapter ended with discussions on the causes of and degree of conflict within the subsector and on the forces causing change in the organization and performance of the subsector.



Next, a discussion of the expected future characteristics of the subsector, given its pattern of evolution, will be the focus of Chapter VIII.

## CHAPTER VIII EXPECTED FUTURE CHARACTERISTICS OF THE SUBSECTOR

Sitting in judgment of an industry and trying to foretell its future is a formidable task. The fact that others have reported on their investigations with the crystal ball helps. Yet, even a consensus among the industry's fortune tellers cannot assure one that the future is being predicted accurately. Hence, this writer is forced both to beg the reader for mercy if the prognostications turn out to be incorrect and at the same time to warn the reader that any desires to take all or part of the following with a "grain of salt" may indeed be justified.

Still, it is exciting to gaze into the crystal ball. Given the previously outlined patterns of the subsector's evolution, some of the fog may be cleared away. Yet, the possibility always exists that some now unknown factor may present itself which will alter the path that the industry follows or perhaps even cloud its very existence. The warnings having thus been stated, this writer will try to present some of the expected future characteristics of the subsector, given the pattern of evolution.

### Spatial Production Patterns and the Roles of Imports, Improvements in Transportation and Handling, and Product Demand

In 1981, the USDA surveyed 28 states in preparing its 1982 Floriculture Crops report. These 28 states were considered the source

of the major domestic production of floricultural crops. Five of the 28 states, however, were not deemed significant contributors to the total U.S. production of any of the cut flower crops covered by the report for 1980 or 1981 [USDA, Floriculture Crops, 1982]. Yet, the 1979 Census of Horticultural Specialties [U.S. Bureau of the Census, 1982] did record at least one producer of "potted flowering plants and/or cut flowers" in each of the 50 states. It is an obvious conclusion that production, although dispersed among the 50 states, is concentrated. Some indication as to the degree of this production concentration was offered in Chapter IV.

This author expects such centralization of production to continue. The advances in transportation and handling procedures and post-harvest physiology almost assure that production will occur in areas where it can be done most efficiently in terms of resource utilization. This definitely points to the Sunbelt and most directly to California.

One of the consequences of production centralization may be the spreading of the concept of auction marketing. One auction market has already been established in San Diego County, California. Although this is the second such market in the U.S. (the other being on Long Island, New York), the San Diego market is the first where cut flowers represent the major crop category auctioned. If the auction turns out to be as successful as the Dutch markets after which it was patterned, this author believes further examples of auction marketing may be established. California seems to be the most likely site of additional examples, but it is conceivable that some of the large import centers (e.g., Miami, Florida, or New York City) may eventually have such

markets organized. However, it should be noted that growers rather than shippers typically have formed the auction markets in the past.

Still, it is probable that some crops will remain locally produced, even in the colder climes. As long as relatively high perishability pervades the reputations of particular species, e.g., roses (poor keeping quality) or snapdragons (high degree of shattering), some localized production may persist near many major markets. Ability to produce and market profitably will, of course, be a determining factor here. Growers using cheaper, non-traditional energy sources, e.g., waste heat or wood conversion systems, may have some advantage. Producers situated close to large import centers may be handicapped.

Imports will naturally be a key product source in the future. Progressions in transportation and handling and the related economics have enabled imports to reach markets in the U.S. often before domestic producers are able to get their product shipped to those same markets. As the points of entry for imports were initially located within easy access of already existing transportation routes, imports entered the market channel relatively unscathed. The inefficient marketing procedures and, for that matter, the inefficient production processes of many domestic operations allowed imports to flourish.

Advances in transportation and handling have and will continue to play a big role in determining where flowers are produced, due to the perishability of the product. In that more of the flowers used in the U.S. will be arriving from overseas production areas, air transportation will probably become more important to the industry. However, truck freight may still be largely used for dispersion of produce from ports of entry. If post-harvest methodologies such as hypobaric storage

become adopted, it is conceivable that ocean surface transportation may be used in the future for imported product. Without doubt, however, further transportation improvements are still possible.

In the interim a greater emphasis may be placed on handling techniques which have potential for improving keeping quality. The advances made by importers in improving the flower handling procedures at some airports provide one example. (Previously, imported product often sat on airport aprons waiting in the sun for inspection by plant quarantine and customs employees. Today, customshouse brokers secure product as it arrives and keep it locked but refrigerated until it is inspected.) Pre-cooling of product before shipment and use of preservatives and preservative-like materials provide other examples of such handling methodologies which have helped to improve flower longevity. Such advances in transportation and handling have obviously allowed for the centralization of production to areas with a comparative advantage.

The growers who have "weathered the storms" of imports, energy embargoes, rising labor costs and other factors of the last decade must be considered more efficient than the firms that failed. The turbulence is far from over, but the grower who now remains in existence, no matter where he is located, probably has a far greater chance of surviving the next decade than did the average grower of a decade ago. Most of the current growers have altered their size, their crops and/or their production processes. Such modifications will likely continue to dominate the U.S. production scene.

Two factors may have telling roles. On the one hand, if, as this author expects, the tide of increased imports continues relatively unabated, a greater industry contraction will occur. However, this

author also expects demand to be spurred, either as a result of a cooperative industry action (e.g., Floraboard) or as a result of the actions of those who have much at stake (e.g., Dutch marketers). If demand is adequately boosted, the future of the now remaining domestic industry will be brighter, although perhaps still changed. If exporters such as Colombia continue to specialize in the major cut flower species, domestic growers might find a more profitable niche in specialized crops. If the Dutch emphasis on shipping a broad spectrum of flowers predominates, domestic growers may face difficulty in profitably raising even minor crop varieties. Much depends on the level of demand. In any case, the survival of the Eastern grower is probably most in doubt, as importers of both major and minor crops have focused their initial product flows through several Eastern cities. There are also indications that secondary ports of entry and cities for trans-shipments are already being investigated (Appendix A).

The market for flowers is increasingly becoming a world market. As such, opportunities exist for trade in all commodities and in all directions. Those countries with comparative advantages will succeed in selling their produce in the same way that states have exercised their comparative advantages in the past. The potential for progress in trade should not be underestimated. Just as there was once a time when the flowers used by the neighborhood florist were almost always raised locally, there may yet be a time when those flowers are equally apt to come from almost anywhere in the world. Growers were once assured that roses could not be safely transported great distances; yet, today roses in the same city may hail from Holland, Israel, Colombia or California, as well as from a nearby grower. Growers were next assured that there

would always be a market for locally produced potted flowering plants, for their bulk made long-distance transport uneconomical; today there is a Florida supermarket chain that regularly receives potted chrysanthemums from a California grower (Appendix A). And today Florida-raised foliage plants are regularly being shipped to Europe [Smith *et al.*, 1981]. The world is indeed becoming smaller in size. A grower's comparative advantage must be of a much higher caliber if he is to survive.

#### Varietal Selections Offered

The post-World War II era has seen some radical changes in the species offered for sale in most U.S. cut flower shops. While advances in breeding have played a role in these changes, the effects of advances in production knowledge and post-harvest physiology cannot be understated in this regard. In the 1800s, the rose, the carnation and the violet were considered dominant species of the cut flower trade. When chrysanthemums were first promoted, some considered them a six-week infringement on these year-round favorites. In 1949, Kenneth Post demonstrated the feasibility of year-round commercial production of chrysanthemums [Seeley, 1979]. Today, the chrysanthemum can certainly not be considered an infringement but an essential for most florists. Standard and pompon chrysanthemums, hybrid tea and miniature/sweetheart roses, standard and miniature/spray carnations and gladioli must be considered the "bread-and-butter" species. According to the 1979 Census of Horticultural Specialties [U.S. Bureau of the Census, 1982], these crops accounted for 81 percent of the cut flower production value in 1979. If anything, this understates the retail importance of these

species, for imports accounted for over half of the carnation (Table 4-10) and pompon chrysanthemum (Table 4-12) supplies in 1979, as well as notable portions of some of the other major species.

Concurrent with the industry's concentration in production of primarily the major species is the retail segment's dependence on the same. During this author's travels, the cut flower inventories of many retail florists were limited to these flowers; often, even some of these were absent. However, it is the view of this author that this will change.

Much of the industry has used a limited inventory specifically for the reason of reducing shrinkage among all items carried. If the consumer is forced to choose among fewer items, the reasoning goes, the turnover of those items would increase. In instances where product shrink is a major concern, one would likely find fewer selections, with those being offered often the hardiest or longest lasting species available. Rural area florists have often resorted to limited product selections for this reason. In the estimation of this author, such a limited offering may contribute to the downfall of the small florist, for the same selections can be presented by anyone, including the non-traditional vendors. This author foresees the struggling florist trying to limit inventory selections, but the progressive florist will most probably try to expand product offerings. As this author also believes that the florist shop of the future will more likely be one of several affiliated shops, inventories of more exotic and perhaps slower selling species can be spread over more outlets to reduce the slow turnover and shrinkage problems.



There are indications that the expansion of selections may be accomplished easily. The Dutch importers have been pushing the adoption of many neglected varieties. The Flower Council of Holland has disseminated posters and booklets illustrating over 240 varieties of cut flowers available on the Dutch auctions which can be exported to the U.S. Many of these are either not produced in the U.S. or are produced in such small numbers that the 1979 Census of Horticultural Specialties does not list them separately. Furthermore, if, as previously mentioned, the Colombians continue exporting primarily the major species, then production of minor species may provide the perfect niche for surviving domestic producers.

Such diversification of species, if it occurs, would probably benefit the cut flower industry. Storck [1979] concludes that the production of new species and varieties plays a key role in keeping flower consumption levels high. He notes that there has been a change in flowers demanded in recent years in West Germany, one of the largest consuming countries of cut flowers on both a per capita and total dollar level basis. Such flexibility and innovation are required for the industry, according to Storck.

#### Computerization

The introduction of computers into the everyday business world will not bypass the cut flower industry. Some computerization is expected to occur at all levels with the effects somewhat different and somewhat related for all in the industry. The future use of the computer may only be limited by the imagination of the users.

Already, some growers are using computers to plan production, to handle their accounts receivables and other book work and for watching inventories of both inputs and finished products. Water systems, black cloth mechanisms for photoperiodic-responsive plants and temperature controls are now being monitored or even completely controlled by computers in some greenhouses. As progress sees more of the growing processes mechanized, the computerization of more of the greenhouse systems used will undoubtedly occur (see Carlson [1983] and Rogers [1983]).

Many similar uses of the computer are being seen at the wholesale and retail levels of the industry. Record keeping of inventories and sales, billing and other bookkeeping chores have been computerized at many firms. Some firms are employing computers and economists for more elaborate planning mechanisms such as sales forecasting or scheduling of input needs (based on past sales and the like). At retail, computer terminals are linking retailers to the various wire services for bookkeeping and billings and for the ordering of featured-arrangement materials, as well as the transferring of orders.

Perhaps the real future of the industry's computer use may come from the linking of growers, wholesalers and retailers through a mass telecommunications network. Such has been done on a very limited scale in some industries between warehouses and distributors and retailers. The linking of retailers in the cut flower industry has already been accomplished to some extent by the wire services. A similar linking could be executed by cooperatives or associations in heavy producing or shipping areas such as Southern California, Colorado or Miami, Florida (importers). Furthermore, if auction markets grow in popularity in the

U.S., as they have throughout parts of Europe and Canada, computerization of wholesalers could be easily accomplished on a wide scale.

If such a link-up between all segments of the industry were accomplished, the organization and performance of the industry could not help but be improved. Many of the hypotheses in Chapter II address coordination and the effects of improved linkages in an industry. Hypothesis H11 suggests greater coordination results from higher technology of coordination. Hypothesis H14 suggests that lower risk, lower cost per unit of output, lower consumer prices, greater output and lower total profits per unit of output result from more tightly coordinated subsectors. System linkages which are long in duration increase information flow and market responsiveness and ultimately result in greater coordination of supply and demand according to hypothesis H15 and its ancillary hypotheses.

Ultimately, such a linkup may also affect the industry's use of grades and standards. Unlike the frequent telephone conversations or face-to-face discussions which are involved in most of today's transactions between growers, wholesalers and retailers, the ordering of product via computer may require a more definitive transaction mechanism. Operators would no longer be able to describe verbally or show customers the condition of the merchandise under consideration (unless video capabilities were included). A class designation may have to describe the limits of product quality adequately, not only theoretically (as is often the case today), but also in fact, as alpha and numeric codes would probably be the mainstay of computer communications. Codes would probably be used to identify everything from growers, wholesalers and retailers involved, to methods of

delivery (e.g., air vs. truck delivery), dates, quantities, species and varieties and levels of quality desired. Such would certainly be progress.

### Size and Numbers of Operators

The future is naturally hard to predict, and when predictions involve quantifiable factors, they must be considered nebulous. Too many events can change the current trends, and the effects that some occurrences can have on an industry or on a segment of that industry may be entirely different than the results of those same occurrences on another industry or industry segment. Time is the only true predictor.

Yet some numeric predictions can be made, given the limits of the data and based on the assumption that current factors will continue operating in the same way. Unfortunately, the cut flower industry has a relatively limited supply of data, and the future of some of the data sources looks bleak at best. Government spending cutbacks in the early 1980s have resulted in the discontinuation of the annual USDA Floriculture Crops report which detailed industry production data. Nevertheless, this author will make some predictions as to the size and numbers of U.S. producers, middlemen and retailers in the future. Due to the nature of available data, predictions of numbers of domestic producers will be of a more precise nature than those of the other operators.

### Size and Number of Producers

The availability of annual data allows for a more precise prediction as to the number of producers of each of the major cut

flower species. As Table 4-5 showed, the number of producers of each of the major cut flower species has declined with time. Table 4-6 showed that the average number of blooms produced per grower of each of the major cut flower species has trended upward during the decade of the 1970s. Hence, domestic producers tend to be getting larger but fewer in number. This author expects these trends to continue.

In an attempt to quantify the actual number of producers of each of the major cut flower species, a series of regressions was estimated using the data for years 1968-1980 from Table 4-5 as the data source. (This period was chosen as it reflected the period when inflationary pressures, imports and energy concerns began to have their effects on the industry. In addition, the data base was more consistent over this period.) From a plot of these data (Figure 8-1), a logarithmic equation was suggested. Both double-logarithmic and logarithmic-reciprocal models were estimated where the log of the number of growers was regressed against time (the four digit year, e.g., 1968), i.e., time was in either a logarithmic or a reciprocal form. The results, as presented below, did not yield predictions which varied by more than one grower for any crop for the forecasting horizon (through 1990) between the two model types. Furthermore, the coefficients of determination ( $R^2$ ) for the various crops did not vary by more than 0.0003 between the two model types. Hence, the somewhat simpler double-logarithmic models were used throughout for forecasting purposes. A major advantage of this model type is the prohibition against yielding negative forecasts. All parameter estimates are considered significant to the  $\alpha = 0.0001$  level.

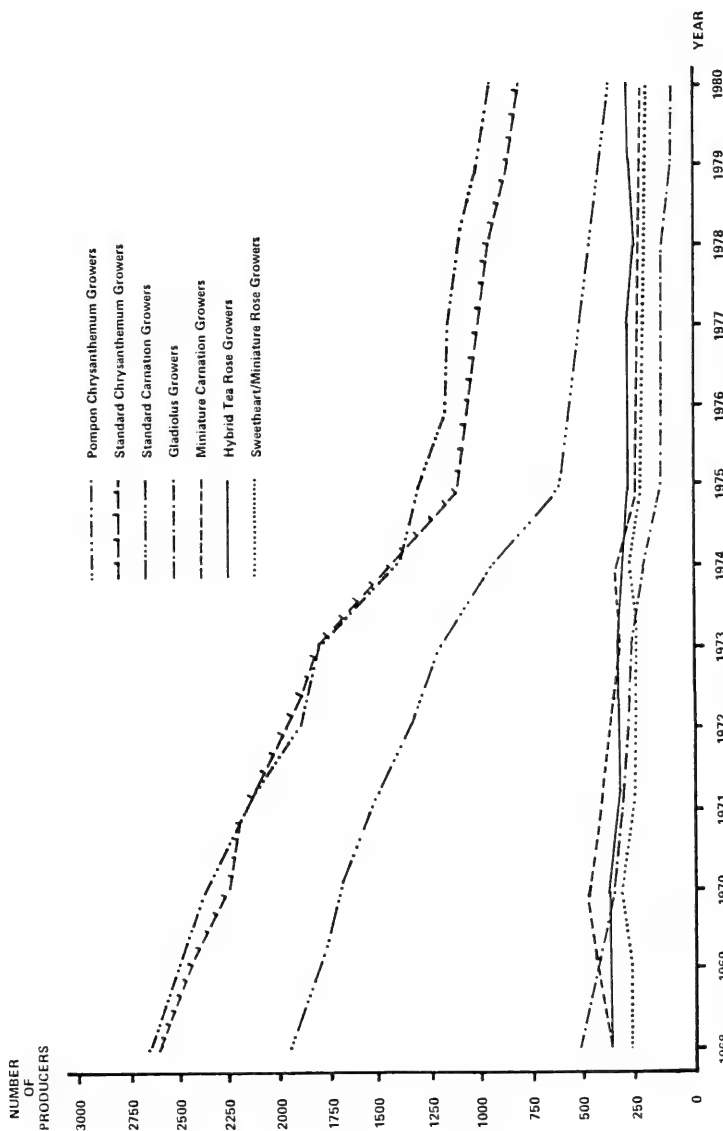


Figure 8-1. Number of Producers of Each of the Major Cut Flower Species, 1968-1980

The models all take the form of the following:

$$\log \hat{G} = \alpha_0 + \beta_0 \log (YR),$$

where

$\hat{G}$  = estimated number of domestic growers of  
the crop in question and

YR = year, in four digit form, e.g., 1968.

Therefore, the number of growers can be forecasted by inserting the year for which a forecast is desired into the model and then taking the antilog of both sides.

The results of the double-logarithmic models for each of the major cut flower species described in Table 4-5 follow. Numbers in parentheses under parameter estimates represent the standard errors. In addition, the coefficient of determination ( $R^2$ ), the mean square error (MSE) and the F-statistic are provided for each model. All models utilize 13 observations in the estimation process.

#### Carnations

$$\log \hat{G} = 2348.57 - 308.6268 \log (YR) \\ (141.7105) \quad (18.6761)$$

$$R^2 = 0.96 \quad MSE = 0.0163 \quad F = 273.08$$

#### Miniature/Spray Carnations

$$\log \hat{G} = 1060.854 - 139.0692 \log (YR) \\ (131.5331) \quad (17.3348)$$

$$R^2 = 0.85 \quad MSE = 0.0140 \quad F = 64.36$$

#### Standard Chrysanthemums

$$\log \hat{G} = 1651.009 - 216.6288 \log (YR) \\ (89.8830) \quad (11.8457)$$

$$R^2 = 0.97 \quad MSE = 0.0066 \quad F = 334.43$$

Pompon Chrysanthemums

$$\log \hat{G} = 1400.394 - 183.5904 \log (YR)$$

$$(81.9230) \quad (10.7966)$$

$$R^2 = 0.97 \quad MSE = 0.0054 \quad F = 289.15$$

Gladioli

$$\log \hat{G} = 2857.96 - 375.9797 \log (YR)$$

$$(249.3866) \quad (32.8667)$$

$$R^2 = 0.92 \quad MSE = 0.0505 \quad F = 130.66$$

Hybrid Tea Roses

$$\log \hat{G} = 691.761 - 90.4233 \log (YR)$$

$$(74.2547) \quad (9.7860)$$

$$R^2 = 0.89 \quad MSE = 0.0045 \quad F = 85.38$$

Sweetheart/Miniature Roses

$$\log \hat{G} = 566.6212 - 73.9644 \log (YR)$$

$$(75.0737) \quad (9.8940)$$

$$R^2 = 0.84 \quad MSE = 0.0046 \quad F = 55.89$$

It should again be emphasized that the forecasts assume that the same factors that have been operating within the industry in the past (here 1968 to 1980), will continue to influence the industry in the future and that they will have the same effects. Among these factors are those that were outlined in the last section of Chapter VII as forces causing change. For growers, imports, the general economy and energy concerns probably are among the most important. Hence, forecasts of grower numbers, for example, assume a consistent pattern of import growth from 1968 through 1990. Only time will tell whether this will have been a realistic assumption.

It should also be noted that the data source refers to "major producing states." Furthermore, only growers with sales of at least \$10,000 were included in this annual survey. Hence, the data and the



prognostications based on these data both ignore the relatively minor production. In toto, however, the grower numbers accounting for the minor amounts of any crop produced may be a significant portion of the total grower numbers.

For standard carnation producers, the forecast does not look good. From 1968 to 1980, standard carnation producer numbers dwindled from 1,930 to 364 (less than 19 percent of their former strength). The predicted numbers assume a similar decline (by the methodology's design). By 1985, if conditions remain unchanged, only 156 growers are expected to continue in standard carnation production, and by 1990 only 72 such growers will persist. This author should note that carnation imports have already captured over 50 percent of the current domestic carnation market. Hence, in percentage terms, importers cannot mathematically duplicate their previous performance. Therefore, predictions may be more distressing than the actual future. Naturally, much will depend on the rate of increase in carnation imports and on the rate of expansion of carnation demand.

The miniature/spray carnation outlook is not as gloomy, again assuming similar conditions in the future. From 1968 to 1980, miniature/spray carnation producers declined in number from 345 to 191 (a 45 percent reduction). The regression model predicts 128 miniature/spray carnation producers for 1985 and 90 producers for 1990.

The story for standard chrysanthemums is not too different. The 1980 tally of standard chrysanthemum producers showed them to be only about 31 percent of their former selves (2,599 operators in 1968 down to 798 producers in 1980). The forecasted numbers for 1985 and 1990 are 431 growers and 250 growers, respectively. As standard chrysanthemums

are largely used for the traditional flower needs of funerals and weddings, this flower's popularity may not be as likely to enjoy a renaissance as some of the other species, should industry demand be spurred by a promotional program or other influence. Furthermore, as Table 4-11 showed, the effects of imports on this flower type were uneven during the 1970s. Much of the decline in numbers of growers must be considered due to the loss of favor for this flower; nothing is expected to alter this decay, in this author's view.

The regression model estimates for numbers of pompon chrysanthemum growers call for a continued rapid decline in grower numbers. Declining to almost one-third of their former strength between 1968 and 1980, grower numbers are predicted to be 557 by 1985 and 351 by 1990, given the present trends. As with standard carnations though, imports of pompon chrysanthemums have already gone from a position of negligence to one of a majority of the U.S. supply over the span of the data. It is again mathematically impossible to duplicate this performance on a percentage basis. Hence, the reduction in pompon chrysanthemum grower numbers may be less severe than the model predictions would suggest.

Gladiolus sales have experienced a decline without any influence from imports. Demand is tied to traditional uses. The eight Florida producers noted by the 1980 data accounted for two-thirds of the reported production for the nation; as these growers retire, much of their production is not likely to be replaced, at least not in Florida. (Some of the Florida producers have no heirs.) The model forecasts that 1980's 66 growers will dwindle to 20 growers by 1985 and perhaps to as few as eight growers by 1990. Needless to say, the forecast is bleak.

However, it should be pointed out that the dire picture painted for gladioli (more than any other crop) may be partly due to the "artistry" of the data source. "Major" gladiolus production only occurs in six states according to recent USDA reports [USDA, Floriculture Crops, various years]. When coverage went from 22 states in 1974 to "major producing states" in the following years, the number of gladiolus growers in "other states" took a sharp dive. Table 4-19 depicted this well; "other states" in 1975 included 17 states, whereas "other" in 1980 included the production of only one additional state. Therefore, the dismal prediction of the regression model must be footnoted to exclude the production of the many growers in many "other states" not covered by the data source. Gladioli are, for instance, raised by many growers in northern parts of the U.S. as a field crop during the warmer summer months.

Rose growers have, in relative terms, a persistence about them. In 1980, they still numbered about two-thirds of their 1968 strength. The regression model forecasts depict some weakening but relative strength, compared with other growers. The 1985 forecast calls for 171 growers to continue rose production; the 1990 prediction foresees 136 producers. It should be noted, however, that rose growers had been relatively unhindered by imports during the span of the data source. As late as 1980, rose imports only accounted for 9.4 percent of the domestic supply (Table 4-13). Table 4-14 showed that rose imports were just beginning to take hold, however, as the first six months of 1981 had 50 percent more rose imports than the similar 1980 period. Again, time will tell the future.

Finally, sweetheart/miniature rose producers appear to exhibit some strength. Over 75 percent of the producer numbers of 1968 were still

countable in 1980. The predicted numbers for 1985 call for 146 growers to remain in production, while 1990's estimate is for 121 growers to continue in their efforts with sweetheart/miniatuure roses.

Table 8-1 summarizes the forecasted figures for producer numbers for 1985 and 1990 and compares these with the numbers from the data source for 1968 and 1980. Again, the reader should be cautioned that the predictions are based on the assumption that the factors affecting the industry during the 1968 to 1980 period will continue to play on the industry during the 1980s and in similar fashion. Irrespective of the regression estimates for the future, this author still believes that ultimately there will be a further reduction in grower numbers with the average grower increasing in capacity.

#### Size and Number of Middlemen

The future seems uncertain at best for the middlemen of the cut flower industry. Although the censuses of the past years show an increase in wholesaler numbers (Chapter VI), there is reason to suspect that numbers alone would present an illusory picture of wholesaler strength. Many industry trends forecast dismal times for middlemen.

On the one hand are predictions by others that smaller retail florists will continue to be the principal clients of wholesalers [Sullivan et al., 1980, p. 60]. The retail industry trends, which will be outlined below, call for fewer independent shops and for more shops which are units of multi-shop firms. Hence, wholesalers will be serving a smaller portion of the industry if the above predictions are correct.

Table 8-1. Summary of Past and Predicted Future Numbers of Producers in the United States of Each of the Major Cut Flower Species for Selected Years

Crop	Year <sup>a</sup>	Number of Producers
Standard carnations	1968	1,930
	1980	364
	1985	156
	1990	72
Miniature/spray carnations	1968	345
	1980	191
	1985	128
	1990	90
Standard chrysanthemums	1968	2,599
	1980	798
	1985	431
	1990	250
Pompon chrysanthemums	1968	2,660
	1980	961
	1985	557
	1990	351
Gladioli	1968	492
	1980	66
	1985	20
	1990	8
Hybrid tea roses	1968	347
	1980	232
	1985	171
	1990	136
Sweetheart/miniature roses	1968	241
	1980	183
	1985	146
	1990	121

<sup>a</sup>For a more complete listing of the number of producers for the years between 1968 and 1980, the reader is referred to Table 4-5. Numbers for the years 1985 and 1990 were predicted using the regression equations detailed in the text.

Second is the prediction that there will be an increased willingness on the part of growers to supply larger retailers on a direct basis. Prince and Robertson [1982] have already documented the willingness of most rose growers to market either part or all of their production directly to retailers. They suggest that the movement toward more retail distribution may be the result of declining profits in traditional channels, due partly to inflexible wholesale pricing.

The surge in the marketplace by mass marketers also poses problems for the traditional wholesalers. Sullivan et al. [1980, p. 58] point out that many wholesalers avoid mass marketers for fear of retaliation from their traditional clients. These actions further open the channel to direct contacts between retailers and growers. If the predictions (to be outlined below) for an ever increasing portion of flower sales going to non-traditional uses do materialize, then the role of the wholesaler who has relied on traditional florists, market channels and uses of flowers will continue to be diminished.

On the plus side are the possibilities that wholesalers will alter their practices. Conclusions of the "Floral Industry Strategy Meeting" (conducted by the Society of American Florists at the Brookings Institution in May 1982) suggest that wholesaling is changing so rapidly that only the most progressive operators will survive. Wholesalers who adapt to mass marketers, the changing communications within the industry and the calls for increased services are rewarded with greater optimism for survival by the industry strategists [Society of American Florists, 1982a].

As for size, this author believes that some groups of wholesalers will either consolidate their efforts or that individual firms will

expand to greater outlet numbers. If retailers expand in size to the point of affording direct shipments from growers, it will take an even larger wholesaler to be able to justify economically the necessary wholesale margins and yet remain competitive. As such, this author foresees the day when large multi-city wholesalers will dominate the middleman's ranks. Firms tied to growers or importers, e.g., Hill Floral Products, Inc. (affiliated with Hill's Roses), or the many outlets affiliated with Denver Wholesale Florists, will perhaps be the most prominent dealers. These too may face some rough times, however.

Still, there may remain many routemen to serve mostly rural area florists. The extent to which these remain a plausible alternative may depend on the degree with which mass marketers in these areas move into floral products. (Mass marketers largely buy directly from growers [Kress et al., 1983].) In numerous travels, this author has seen some of the most full-service supermarket floral operations in rural area stores. Even chains of as few as six stores had full-service floral departments. If the traditional "mom-and-pop" florist can survive in the face of such competition (which this author has his doubts about, especially if the truly independent supermarkets continue to diminish in number), then there will continue to be need for floral routemen; as such traditional retailers fade from the scene, the importance of the floral routemen who serve them will also depreciate.

If the middleman's position is phased out of the industry, at least two phenomena are sure to occur. First, the "real" functions currently provided by middlemen will be absorbed by others. (This excludes those functions provided purely as non-essential services.) Secondly, according to ancillary hypothesis d of hypothesis H15 (Chapter II),

communication between subsector members would likely be improved as intermediaries are eliminated.

#### Size and Number of Retailers

This author's thoughts about the future of the retail segment of the industry are likely to be the most controversial, but to this writer, they are perceived to be the prognostications most likely to result with time. As with all of the forecasts in this chapter, they are subject to change if the industry veers from its present course. However, in the opinion of this writer, it will take some rather drastic industry modifications, some of which are not likely to occur, before these predictions are reformed.

Whereas the majority of these possibly unnerving prognostications will be presented in the next section of this chapter under the discussions of the mass market and the traditional retail florist, the size and number of retailers alone may cause some consternation. This author believes that the future holds great things for the cut flower industry and that greatness will begin with size and numbers. The average retailer of the future is foreseen to be much larger in size. Furthermore, it is anticipated that the average retailer will have many outlets. Often these outlets will be less than full-service undertakings that will be complemented, but only in some cases, by a central distribution and/or service center; this center may handle all bookkeeping, ordering, delivery, wire service and perhaps most or all of the design work functions.

However, it is also predicted that this average retailer will in no way be related to nor approximate in scope the average retailer



of today. Indeed, a tightening in the market (discussed below) may already have begun. Instead, many of these retailers may be the present mass market outlets. Many of these retailers may be progressive multi-shop retailers a la Bachman's, Inc., of Minneapolis/St. Paul, Minnesota, Al Felly of Madison, Wisconsin, or Jose Falconi's Southflower Markets of New York, New York, Atlanta, Georgia, and Dallas, Texas. And many of these retailers may include operators who sell at least some of their flowers on street corners or wherever they can be in the public eye and literally in the public's way.

As such, it is this author's view that the average town in America will be dominated by only one florist, a florist who would be "The florist," whereas a large city may be occupied by only a few of such "The florists." Such a florist, it is thought, might have several outlets with which customers can interact. However, the role of most of these outlets would be one of order taker and/or supplier of loose cut flowers, pre-made bunches of mixed flowers and, perhaps, some pre-made centerpieces. These flowers and centerpieces would be supplied to the branch stores by the "main shop." These will, along with mass merchants, street corner vendors and others, provide the bulk of flower needs for the public. For the most part, the services of the floral chain's top designer(s) will be used only in creating the model from which all of the many copies are patterned (by less talented staff) and for the rare customer who is willing to pay a high premium for the head designer's artistic expertise and attention in making an original/highly creative arrangement. Consumers will fill the majority of their floral needs as they might go grocery shopping or run other errands and will probably only visit the equivalent of today's traditional florist for

the personal service required for an elaborate wedding or casket spray. As such, the forecast is for many, many more retail outlets for fresh cut flowers and for a much higher outlet-to-firm ratio (as the same firm will operate many branch facilities). The number of trained florists will probably be reduced, although training of other personnel will be much improved. The number of industry employees will rise drastically, as lesser-trained staff will be needed to man the additional outlets.

The recent Censuses of Retail Trade have indeed shown an increase in the numbers of floral establishments (Table 5-2). Some may argue that the unusually large increase in numbers of shops between 1972 and 1977 (when compared with other inter-census periods) was the result of the inclusion in the 1977 Census of many plant boutiques and other less than full-service outlets. Indeed the period between 1972 and 1977 coincided with the rapid rise in the foliage plant boom [Smith et al., 1981]. Many of these plant businesses never carried inventories of cut flowers and many no longer exist. Hence, some tightening may already have begun in the traditional retail ranks, a tightening that may have as yet been masked by the data.

#### The Mass Market

The wave of mass marketing of floricultural products that coincided with the foliage surge of the 1970s has done much for the floricultural industry. New market outlets largely benefited foliage growers, who were followed closely by producers of holiday plants and other potted blooming plants. Sometimes bedding plant growers were also helped, and merchandisers peddling hard good accessories were even warmly received by mass merchants. The real orphan of the product

adoption process has been the cut flower producer. Of those mass market firms handling floricultural products, more firms have omitted cut flowers from their inventories (on either a regular or a seasonal basis) than have excluded foliage plants, potted blooming plants, bedding plants or accessories [Kress et al., 1983]. This author suspects that the future will witness a tremendous change in this regard.

Mass marketers are often constrained in their merchandising practices. Sometimes competition provides such a constraint. In the case of supermarkets, for instance, the amount that operators can charge for food is somewhat limited due to the regularity of grocery ads and the rapidity with which many competitors can afford to move into a community where above normal profits are being made. Added to this are the pressures of American tradition and USDA policies which have tried to keep the portion of the consumer's dollar that is spent on food among the lowest in the world.

Floricultural products provide some escape from these pressures for mass marketers. Although sometimes called food for the soul, flowers are not considered basic essentials; hence, many of the issues involving the morality of making profits from food sales are muted. Furthermore, mass marketers have often been able to offer floral products to consumers for less than their traditional florist counterparts, at least partly because of quantity discounts [Brazes, 1981; Zbytniewski, 1980]; therefore, the consumer often feels rewarded with a bargain. But the biggest factor that comes into play when mass marketers offer flowers is that they can do so while making what are among the highest margins in the store. The 30 percent to 50 percent gross margins which are common for floral products [Kress et al., 1983] rank well above those

typically charged in other supermarket departments [Miller, 1977]. Cut flower margins are the highest among the floricultural products [Kress, 1979]. These relatively high margins should lead to an even greater expansion in sales of cut flowers among mass marketers in the future.

This author firmly believes that the portion of cut flower sales made through mass markets will increase drastically. Depending on the extent to which traditional operators modify their approaches, this mass market portion may become one of dominance. This author anticipates the day when the number of supermarket outlets that carry cut flowers will be at least as numerous as the number of traditional florist shops.

Several trends suggest that mass marketers will adopt a nearly full-service attitude for their floral departments. There are already some supermarkets which have joined the traditional wire services, and a new wire service which caters specifically to the mass market has already been formed. There are some supermarket chains which allow their patrons to use credit cards for their floral purchases. And delivery, although rare among mass marketers, is not unheard of. Many chains have invested in training programs and have staffed their displays on either a part-time or full-time basis. The percentage of supermarket chains using either open or closed refrigeration for their fresh flower sales has risen steadily [Kress et al., 1983].

All of this activity will have an effect on flower demand as well. The mass market made the impulse sale famous, and in the case of flowers, a flower's very presence often creates an immediate need. This type of sale has largely been unknown previously in the cut flower industry. Hence, as more and more mass marketers move into cut flower sales, the demand will probably rise (structural shift).

Eventually, however, the adoption of full-service facilities may shift the purchase planning of the consumer. In much the same way that consumers have learned to shop for holiday plants while buying their groceries (e.g., lilies at Easter, poinsettias at Christmas or mums, azaleas or hydrangeas for Mother's Day), the average person may naturally move to the filling of even their traditional cut flower needs at their local supermarket. If this transformation occurs, there may be a gradual redefining of the price elasticities of demand at retail. The elastic nature of supermarket flower sales (Chapter V) may gradually "merge" with the more inelastic nature of traditional sales. If this occurs, the use of flowers on a daily basis may become a reality, just as it has throughout much of Europe.

#### The Traditional Florist and Floral Services

The greatest effect on the traditional florist will come from the mass marketer, in the view of this author. The mass market as a whole will not only alter the competitive structure of the industry, but particular successes among various mass merchants may provide examples of new and innovative ways of merchandising the product. For that matter, the challenge posed by the non-traditional retailer might even redefine the product for many retailers.

For the last decade or so, some traditional operators have voiced the concern that their product was misinterpreted--that the product they sold was not floricultural in nature but only floricultural by coincidence. Their product was service. Hence, many felt that there was no competition between mass marketers who sold flowers and

traditional retailers who sold service. At this point in time, such is probably true.

However, mass marketers are beginning to add some design and other services, and some retail florists are beginning to stress flowers rather than service for their product. For that matter, many of the built-in services of yesteryear now cost extra in a retailer's pricing structure. Not only is delivery extra in the majority of cases, but some retailers make additional charges for a container, for designing an arrangement, for including a packet of preservative with the order and the like. At one time, few florists made such differentiations. A person sending flowers via wire often faces the biggest shock as sales taxes, service charges, wire service fees and delivery charges are often added after the decision on the amount to be spent on flowers is made. Hence, the product is definitely getting redefined as one including flowers and a whole list of optional services.

As such, it is felt that the future holds an entirely different picture of a florist. The traditional florist may become a mass merchant of flowers and services. Some may offer fresh flowers and flower arrangements. For the most part, the personal touch of a particular designer will be replaced with an anonymous personage who has prearranged the flowers. The customer will be offered a group of arrangements and, once a selection is made, one of many like arrangements will be sold. Sometimes (as is already available in some cities for the mass marketer) the arrangements will be made by a wholesaler. Often these arrangements will be made by a designer at another location, perhaps a "main shop." Less in-store service will be offered in the satellite stores, although some services may still be procured through

the main establishment. Even self-service situations may prevail in some instances. This transition will not really mean a neglecting of the consumer, although it will mean a change. This shift will represent a reformation reflecting consumer needs and wishes. Consumers may want convenience, but that may no longer mean the ability to handle an entire order in absentia. In the future, convenience may mean the moving of the store to the consumer rather than the delivery of the product. The future may simply mean that the retail florist shop will have to become an efficient mass marketer--a mass marketer of flowers, a mass marketer of arrangements and, in limited instances, a mass marketer of some selected services. In the future, there will necessarily be a lessening of the demarcation between traditional and non-traditional retailers.

Yet, the traditional retailer as known today will probably not completely disappear, although future numbers might make it seem so. There may remain one florist for every sizeable town or small city and perhaps a handful for a moderately large city. This florist shop will cater to the exclusive, though not necessarily the wealthy, as "the town florist." This florist will probably be sought for the rare event when a lot of personal attention is required (for example, the wedding or the grand opening), when very large centerpieces will be needed or when flowers will have to match material in a dress, or specifically address a particular theme. In these instances, one highly trained designer will be supported by several less-talented staff members. When not handling the particulars of such an occasion, this designer might create a sample arrangement for the other personnel to promulgate *ad infinitum*. These copies might then be distributed to the many satellite stores in the florist shop's chain.

Satellite or regional stores may be the methodology whereby most consumers come into contact with this florist. Some of these stores may be in supermarkets or department stores. Some stores may be in hospital lobbies, thereby eliminating need for hospital deliveries. Some florist outlets may even be affiliated with funeral homes (see Gubbins [1979]), at airports, in office buildings or the like. Florists may even adopt street corners or sidewalk displays for some of their sales outlets. In many cases, the florist may remain anonymous at some of these locations, particularly in instances where less than full service is offered. In a sense, the conclusion may be reached that what consumers want is accessibility to the product itself and not necessarily availability of all the services previously associated with bringing that product to consumers (i.e., delivery, telephone, charge accounts, etc.).

In a sense, the move to "flower shop chains" may be analogous to past trends in many other industries. Supermarket chains have largely replaced "mom and pop" grocery stores. Liquor store chains have supplanted the independent neighborhood taverns in many cities. Large discount stores now carry many of the items formerly inventoried by a whole string of independent operators in everything from hardware to automotive to gardening to appliance needs. Although independent entrepreneurs who merchandise each of these product lines still exist, these stores have often joined buying and/or marketing cooperatives. The truly autonomous businessman has almost disappeared in many of these industries.

Delivery will become much less important for the florist of the future as a result of the expected growth in outlet numbers. Stigmas now associated with persons carrying gift flowers to the recipient will



easily be overcome due to greater accessibility and higher delivery charges. The flower deliveries that remain after this transition will be revamped as florists rely more heavily on pooling of deliveries; as a result, more florists may adopt "delivery deadlines" for same-day service. Often delivery will originate only through the main shop.

Delivery may also become a much more selectively offered service. Florists may assume delivery is included in orders involving large pieces, such as for weddings. However, minimum order amounts in addition to delivery charges may be more frequently used in an effort to discourage the added handling. In many cases, delivery will simply not be offered.

#### Use of Flowers

Forecasting how Americans will use flowers is very difficult. Some of the trends may already be underway, whereas others may be far from started. The use of flowers on an everyday basis, frequently mentioned as being characteristic of much of Europe, may also become characteristic of this country. The list of occasions and holidays which were mentioned as primary flower events in Chapter V may become revised. To a large extent, the types of flowers used may influence the number employed. In the end, these factors will largely determine the industry's health.

One often reads statements in the industry's trade press which allude to the almost daily use of flowers in several European countries [Nicholas, 1982c]. Yet, as Table 5-1 suggested, very few of the sales of traditional florist shops in the U.S. are for other than specific occasions. Mass market sales, on the other hand, are largely considered

impulse oriented [Kress, 1976a]; however, as these currently account for only about 10 percent of cut flower sales [The Floral Index, Inc., 1979, 1980], the non-occasion market in the U.S. can be considered principally ignored.

Instead, as Table 5-1 showed, the majority of sales of traditional flower shops are made for funerals. Holidays rank second in importance. Other occasions such as illnesses/maternalities, birthdays/anniversaries and weddings also play very major roles in flower sales.

This author is not alone in suggesting that the industry will see many changes in this regard. Several authors have suggested that the U.S. consumer will become "Europeanized" in his flower buying patterns [Nicholas, 1982c]. Indeed, much of the discussion on Floraboard expresses the hope that this promotional program will spur demand. The "Friday Flower" program of the American Florists Marketing Council attempts to convince consumers that a weekly indulgence in flowers is quite appropriate.

On the other hand, Table 5-1 also revealed several trends. The importance of the funeral to the traditional flower shop has definitely declined, while sales for birthdays/anniversaries, weddings and illnesses/maternalities have remained fairly stable. Holidays have become somewhat more important, according to the table. Figure 5-1 suggested that some of these trends will continue; witness the declines in the death and birth rates and the rises in the hospitalization and marriage rates. In addition, cultural mores have changed and will continue to do so. Sending funeral flowers seems to be less fashionable than it once was, while flower use for other than first marriages is often considered *passé*.

The "Europeanization" of flower buying habits in America, if it does occur, will certainly cause an overwhelming change in the proportions exhibited in Table 5-1. Storck [1979] provides information dividing the European market into consumers who buy as a matter of necessity and those purchasing flowers on impulse. The necessity segment of the industry, which includes household demand (for weddings, birthdays, hospitality, funerals and holidays) and the institutional demand (in which flowers are bought for these same occasions as well as for office decoration), accounts for only about one-fifth to one-fourth of the market in West Germany. This market is serviced largely by the traditional flower shop. The more volatile impulse market, comprised largely of customers buying for home decoration, accounts for the remainder and is serviced by street vendors, retail shops, general food stores and supermarkets. Non-traditional outlets certainly play a dominant role in the marketplace in Europe, and the high concentration of outlets is often credited with being at least part of the explanation for higher demand levels.

Another factor often cited as contributing to the high flower consumption levels of Europe is the plethora of varieties offered. Storck [1979], von Alvensleben et al. [1980] and others have attributed part of the high European demand to the broad and constantly changing assortment of species offered in the marketplace. The improvements in transportation and handling will assuredly give the U.S. market an even greater accessibility to flowers from around the world. This alone may contribute to an industry renaissance of sorts. Furthermore, it is obvious from examination of Tables 4-1 and 4-11 that production and subsequent consumption of species such as gladioli and standard

chrysanthemums has declined in recent years; part of this phenomenon has been attributed to a decline in funeral business. However, the availability of and the accessibility to variety may better reflect consumer preferences and hence change the crop production as well as the consumption patterns.

There are untold other factors which may also affect flower use. Creation of new flower-giving holidays or occasions, increased competition in the marketplace from other products, the general economic climate (e.g., price levels, income levels, etc.) and other factors may all affect flower demand. Unfortunately, these factors do not all produce favorable results from the cut flower industry's standpoint.

Opposing forces are illustrated in Figures 8-2(a) and 8-2(b). An outward shift of the demand curve (Figure 8-2(a)) might result from increased promotional programs and expenditures (e.g., the proposed Floraboard), from the creation of new flower giving holidays or occasions (e.g., Grandparent's Day, National Secretary's Week or the suggestion of taking flowers along when invited to dinner) or from increased presence in the marketplace of locations to buy or varieties which spur demand. Declining use of flowers from changing customs (e.g., funeral flowers) or increased competition in the marketplace (e.g., from new products) or for the consumer's dollar (e.g., prices of other goods rise) might effect a shift such as that illustrated in Figure 8-2(b).

If the U.S. market does take on the characteristics of many of the European flower markets, a real modification could occur in the pricing structure. The European market is, for the most part, spontaneous and demand has been characterized as highly elastic in nature. The U.S.

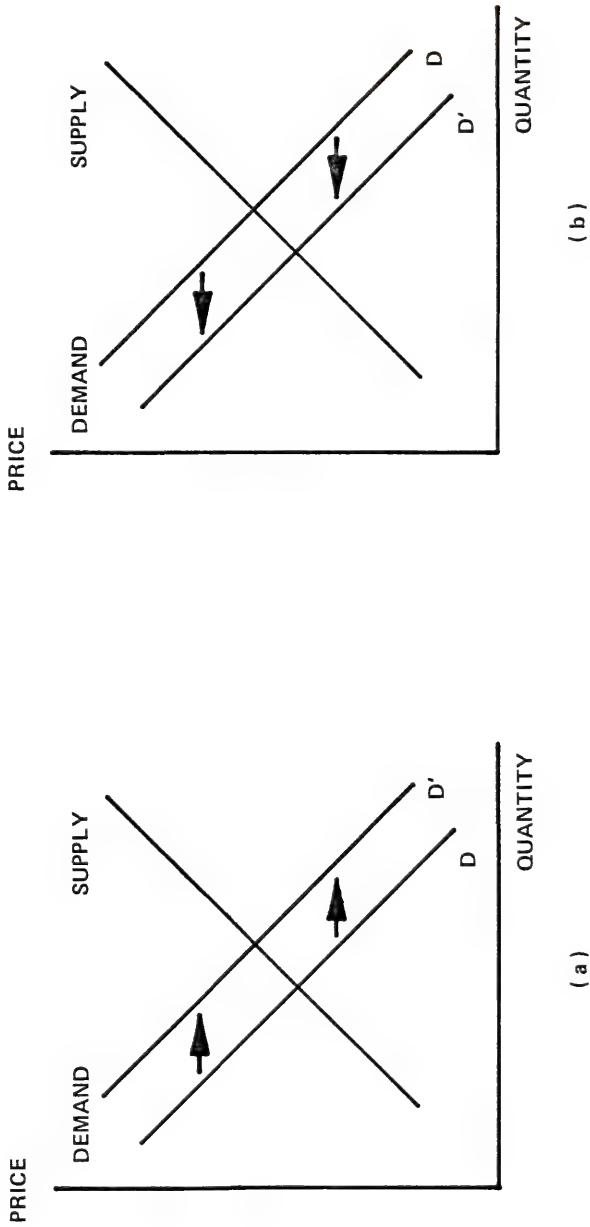


Figure 8-2. Depiction of Possible Shifts in the Demand Curve (from  $D$  to  $D'$ ) Resulting from an Increased Demand (a) or a Reduced Demand (b)

market, on the other hand, is largely tradition-bound, corresponding to an inelastic demand. By definition, consumers display an increased sensitivity to prices in a marketplace with an elastic demand as compared with the highly inelastic situation. Depending on the relative changes in supply and demand that result from any "Europeanization" of the American marketplace or from any other factors, prices may fall, rise or remain relatively unchanged.

#### The Future as It Relates to Behavior and Performance

The future is indeed a mystery which only time can verify, but it is fun to speculate. If the forecasts noted here do in fact materialize, even further speculation about the industry might occur. Increased product availability at retail (from more locations) would probably spark increased competition at all market levels, as retailers strived for the best bargains from suppliers, who in turn would also respond with greater competition. Such competition would necessitate improved market information which would hopefully result in improved communication and improved industry performance.

Another hypothesis might begin with the industry becoming less reliant on holidays and special occasions. If this occurs, whether from a promotional campaign or from "Europeanization" or whatever, fewer fluctuations in prices would probably occur. This might improve market information and might create a better price-quality relationship. Greater equity among various market channel participants might result, as would possibly a greater appreciation of grades and standards.

Conceivably one of the greatest improvements in the subsector's behavior and performance might result in the area of supply offerings of

sellers matching the demand preferences of buyers. Increased availability of various species has and will continue to emerge as a consequence of improved transportation and handling. Greater numbers of market outlets and the merchandising of flowers themselves would hopefully result in improvements in determining consumer preferences. Hopefully, improved communication will transfer the consumer's wishes back through the market channel.

All in all, it is hoped by this author that improved communication will also lead to reduced conflict in the subsector. Issues relating to risk, traditional versus non-traditional suppliers and retailers, grades and standards as they relate to prices paid and quality received and many other industry debates often stem from lack of information about others and lack of communication of the facts. Hopefully, the future will be experienced together and appreciated by all.

#### Summary

This chapter has presented the author's expectations about the future of the cut flower industry, given the pattern of evolution. Prognostications on the spatial production patterns and the roles of imports, transportation and handling and product demand were presented. Discussion also centered on the varietal selections that will be available, the role of computers and the size and numbers of operators at each level in the industry of the future. Predictions were included about both the mass market and the traditional florist and floral services, and about the future use of flowers. The chapter concluded with a brief discussion about the future as it relates to behavior and performance.

Next, a review of the present and potential problems in the subsector and the opportunities for improving performance will be offered in Chapter IX.



CHAPTER IX  
PRESENT OR POTENTIAL PROBLEMS IN THE SUBSECTOR--  
OPPORTUNITIES FOR IMPROVING PERFORMANCE

In 1955, Warren Trotter authored a doctoral dissertation at Cornell University on the problems of marketing florist crops. Trotter [1955] placed particular attention on the issue of the standardization of grades, the problems of wholesaling flowers, the area of improving merchandising practices of retail florists and the matter of market information. In some ways, the industry has not changed, as many of the same concerns focused on by Trotter still have significance for the subsector today.

Much of the discussion of the previous chapters has involved the performance of the U.S. cut flower industry. In the course of the presentation, many of the industry's problems have become apparent; in both the review of coordination in Chapter VI and the elaboration on the causes and degree of conflict within the subsector in Chapter VII, several problem issues were specified. Five areas which present obvious opportunities for improved performance in the subsector will now be focused on in this chapter. Included in the discussion will be the issues of grades and standards, post-harvest physiology, industry statistics, educating the industry and the consumer and the influence of alternative laws, policies and institutions on the organization, control and performance of the subsector. Although some of these topics may seem reminiscent of those presented by Trotter [1955], much of the

industry climate has been altered since 1955. Another look is warranted.

### Grades and Standards

The issue of grades and standards encompasses more than just a reference to product quality. The grading of product quality is of course paramount, but the issues of freshness dating, with perhaps some indication as to whether and how flowers have been stored, and packaging considerations can be considered relevant grades and standards issues as well.

The concerns surrounding the grading process are complex, to say the least, both from a horticultural perspective and from an economic theory point of view. Theory suggests that grades must be meaningful to consumers and that they must provide an efficient means for consumers to transmit their desires through the market channel to producers [Rhodes and Kiehl, 1956]. However, among agricultural products, there are countless examples where one could question whether or not the end consumer is even aware that product is graded. Fluid milk marketing provides an example, as only Grade A milk reaches the consumer market in fresh, fluid form; all other milk grades are diverted to processing. Hence, one might suggest that consumers need not necessarily be aware of grades; instead, it may only be required that consumers derive benefits from the graded product (for grades and standards to be meaningful). The consumer benefits are then recorded as sales.

This slight deviation from Rhodes and Kiehl aids the discussion of grades and standards for many products, including cut flowers. As the overwhelming majority of cut flowers is currently sold in arrangements,

the consumer is seldom if ever exposed to cut flower grades directly. (About 90 percent of cut flowers are sold by florists [The Floral Index, Inc., 1980, 1981]. Cut flower sales in arrangements account for about 47 percent of total florist shop sales, while unarranged cut flowers account for only about 7 percent of these sales [FTD, 1982c].) Furthermore, it could be argued that, for the most part, the consumer does not even buy frequently enough to detect the varying grades. Even when consumers do purchase flowers, the product often travels sight unseen to some other recipient. For the frequent flower purchaser, however, grades and standards may be more meaningful, although perhaps still indirectly. In theory, however, it is only through their purchases that customers can cast their votes for higher or lower quality product. The retailer in turn passes consumer desires back through the market channel.

Cut flower grades have been called into question on many occasions. DeLoach [1959] claimed that the average man or woman was far less concerned with the finer points of a flower than was the florist or the plant breeder. Howland suggested that the average quality standard that the end consumer does care about is freshness [Bauer, 1982]. In his travels, this author found that many industry operators shared freshness as a primary concern and an important marketing tool in their sales promotions or supply searches. Some wholesalers and retailers, for instance, demanded that flowers be shipped within 24 hours of being cut. At the other extreme are the countless wholesalers who reported instances of retail clients seeking "funeral grade" flowers; this, however, may be more a reaction to price discounting than a real desire for more mature specimens (Appendix A).

Nevertheless, freshness (or product dating) does not now appear as a criterion for cut flower grades. Freshness, it can be argued, varies with time and care; hence, it may be more difficult to define or categorize than are either stem length or bloom diameter, the two major components of the current grading schemes. Freshness, in terms of time from cut, is not necessarily a good indication of keeping quality, as poorly handled merchandise will not keep as well as properly handled product. In this respect, cut flowers are very similar to fresh milk, which sours if left out of refrigeration. Increased publicity on appropriate flower handling methods throughout the market channel will go a long way towards increasing flower longevity, in much the same way as warning labels on milk cartons warn the consumer to keep the product refrigerated.

Another component of freshness then might appropriately include an indication of how the product has been stored. Handling methodology varies, depending on whether product has been rushed into the market channel immediately after harvest or stored. Method of storage may even affect handling, as product stored in water is different from the typical dry-storage product, and both are very different from hypobarically stored merchandise. Length of storage time definitely affects handling procedures as well. Hence, those suggesting the inclusion of a notice of date of cut as part of the product package should perhaps amend their pleas to include a declaration about product handling and/or storage.

Still, the grades and standards as now applied may have some merit in the industry. Several wholesalers indicated that their clientele often requested certain grades of flowers, and shippers regularly sell

by grade. Many growers, especially carnation, rose and gladiolus producers, apply grades which are fairly standard in the industry. However, few would dispute the statement that there is much room for improvement, even among the growers of these species.

In examining the current grades, one is forced to ask whether the existing grading criteria, which stress blossom size and stem length, are appropriate. In many cases, an affirmative answer is warranted. Floral design techniques often suggest proper placement of flowers in an arrangement based on flower size and stem length. However, one is forced to note that florists, more often than not, chop a goodly portion of a flower stem's length off while arranging.

It has been argued that stem weight often correlates with desirable flower characteristics [Trotter, 1955, p. 68]. In this respect, it is conceivable that stem weight may serve as a guide to a flower's innate longevity potential. As many new production techniques aimed at speeding production time (to reduce costs) may sacrifice stem length without forfeiting product quality, a re-evaluation of the importance of stem length may be needed. Roses (where longer stem lengths are associated with increased romantic qualities) and spike flowers (e.g., snapdragons and gladioli, where longer stem length is often associated with longer flower spikes) may provide cases where a stem length criterion is still important.

One of the biggest problems with the current grades and standards is their sometimes variable application between growers and graders. Nichols et al. [1983] suggest that the proliferation of multiple grading systems and standards, given that a large number of firms handle the same distribution of product qualities, results in marketing

inefficiencies and dissatisfaction among market channel operators. They maintain that the reasons for grades and standards are to provide a reward for quality conscious producers, to furnish market information about commodities being traded and to offer a means for which the level of this information is nearly equalized between buyers and sellers.

Nichols et al. [1983] note two additional points, as follows:

First, they suggest that the need for grades is often eliminated in vertically integrated firms. Hence, a firm such as Veldkamp's Flowers of the Denver, Colorado, area only counts but no longer grades the flowers from its production which are destined for its own retail shops. Designers choose their desired "quality" types as they arrange.

Secondly, the use of brand names and the reputations of firms providing product often reduce the reliance on grades and standards. Hence, one can conclude that the names Hill's Roses, Denver Wholesale Carnations or Kennicott Brothers Wholesalers, for instance, all have a reputation attached to their flowers which may mean as much as, if not more, than any blue, red or green grade labels attached to the product. As such, flowers become "experience goods" in a very real sense.

Zusman [1967] cites the following incentives for grades and standards:

1. The sale of unsorted products constrains the buyer's freedom of choice.
2. The existence of established standards removes much of the uncertainty of exchange.
3. Grades and standards may yield certain monopoly gains to the sellers in that they may be able to establish some price discrimination and/or product differentiation.

The establishment of grades can be challenging. Given a continuum of product qualities and that all persons perceive those qualities similarly, then the encompassing of multiple quality types into a single grade tends to lower the average price of the product relative to what might be obtained for product of only the highest quality. Furthermore, the average price for groupings of product types would tend to be higher than that price received for the lowest quality type if product were segregated. The laws of supply and demand then work to assure appropriate compensation for product quality, as follows:

An increase in the supply of one grade depresses the price of that grade; this then reduces the premium or widens the discount of that grade relative to others. The lower price for this one grade in turn leads to reduced demand for other grades as consumers substitute away from the relatively higher priced other grades. Reduced demand for these other grades then forces their prices down, which in turn influences the demand of the initial grade. Thus, the system remains in balance [Tomek and Robinson, 1972, p. 139].

Alternatively, if the demand rises for the top quality merchandise, its price is bid up, *ceteris paribus*. Should that price rise too much, such that consumers would tend to favor the second grade quality, then the price of the original grade would drop as the price for the second grade product rises in response to an increased quantity demanded. As the price of the top grade merchandise drops to the point of matching that of the second grade product, consumers would rationally opt for the most favored product quality, i.e., the top grade. Hence, the controlling laws of supply and demand often work in concert with grading

to increase the value of product to the buyer; this alone may spur product demand.

Here is where the final customer enters the picture. If a product is bought frequently enough for qualities to be differentiated by the average consumer, then grades and standards become more meaningful. As long as purchase is so infrequent by the majority of users such that the various grades and standards are never perceived, then the transfer of benefits to the final consumer becomes non-existent. In the case of cut flowers, the purchase-infrequency problem may be compounded by the fact that the buyer often never even sees the flowers for which he had paid and, hence, never gets to judge product quality (e.g., when flowers are sent as gifts, for wire services or to funerals). Thus, grades and standards may never feed back through the system for many consumers.

Part of the standards issue concerns product packaging, as packaging issues work in a very similar fashion to those of grading. Consumers buying on a very infrequent basis or without a full awareness of the characteristics of the product purchased do not get to "vote" on their favorite product package, or at least that vote, if cast, may not be registered. Consequently, sales of dozens may permeate the industry based on tradition, when customers may actually prefer to buy flowers in groups of 3s, 10s or 15s. Likewise, arrangements of one species may dominate even if mixed bundles are preferred. As such, the limited purchase patterns hurt. An industry with increased demand may need to strengthen its grades and standards procedures.

Two other points deserve special mention. First, seasonality in supplies of various qualities, sizes or varieties of a product can result in seasonal patterns in quality premiums or discounts [Tomek and



Robinson, 1972, p. 138]. Hence, the true peak and valley price pattern may be partially distorted due to the temporary admittance of, for example, lesser quality flowers into the market channel during periods of peak demand. If standards remained constant, the peaks for top quality merchandise might be higher and the valleys lower relative to periods of abnormally graded product.

Like the vagaries of the seasonality issue, imports have a peculiarity of their own. Product shipped from overseas is often harvested in the bud stage. Relative to the movement of some of the flowers raised in the U.S., which are often harvested and shipped closer to a full-bloom stage (e.g., carnations), bud-tight imports can achieve tremendous economies of scale in air freight. However, there is some question as to whether or not it is possible to grade product accurately in the bud stage when a major part of the grading system concerns bloom diameter. Stem length can, of course, be determined correctly in the bud stage; however, because of the blossom diameter criteria, imported product may overlap a larger part of the grading continuum than does U.S. grown merchandise. Hence, one might expect imported product to be discounted. Due to the seasonality issue previously noted, such discounting might be particularly severe during weak market periods and less noticeable when product supplies are tight.

The intricacies of the grades and standards issue are indeed evident. Any forthcoming increase in demand by the U.S. consumer would certainly warrant a re-examination of flower grades and standards. Frequent consumer purchases of cut flowers, as opposed to the now rare purchases of flower arrangements and associated services, would most likely result in an increased awareness of varying quality attributes.

It is in such an atmosphere that consumer-responsive grades and standards would truly serve the industry.

### Post-Harvest Physiology

To most, post-harvest physiology concerns in the context of the cut flower industry translate into a question of product longevity. As cut flowers are definitely perishable, post-harvest physiology provides an area that will always leave room for improvements; such is practically assured when discussing any perishable commodity. Until a product's natural deterioration can be almost totally checked by freezing, concentrating or some other methodology, the perishable nature of a product insures that industry personnel will operate with a sense of urgency guiding their distribution schemes. Once some preserving technique is discovered, research in post-harvest physiology is still important for improving on that knowledge.

The area of post-harvest physiology is as important for cut flowers as it is for any perishable commodity. Many storage applications have direct implications for the marketing procedures of the industry. Various techniques of handling greatly influence the product which, in turn, reflect on the subsector. In addition, various pre- and post-harvest techniques interrelate in determining the post-harvest longevity of the crop. In many instances, these storage, handling or life-extending techniques point to obvious opportunities for improvement; these will each be outlined below.

Storage concerns, of course, relate directly to crop marketing. The ideal would probably be to have demand at such a level that storage

would not be needed. It would be far nicer to have to worry about how fast the merchandise could be sold rather than how long it can be kept.

However, as noted in previous chapters, the industry does provide some incentives for product storage. The peak and valley nature of cut flower demand and the associated price movements (Chapter V), coupled with the variable nature of production costs (due in large part to the change in seasons, i.e., light, temperature, etc.), in large part provide the *raison d'être* or motives for "long-term" storage. The possible financial gains from successful product manipulation provide the incentive for further research in this area.

One potentially promising methodology to arise from this industry environment has been that of the hypobaric storage of cut flowers. This method, if commercially adopted, would allow product to be raised during periods of relatively low factor costs, e.g., when heating costs are low, and stored until demand intensive periods. The method involves the use of a low pressure, low temperature and high humidity environment; flowers are usually stored dry. As yet, however, hypobaric storage has not been shown to be a cost effective storage methodology for cut flowers.

On a much less sophisticated scale, growers, wholesalers and retailers often subject flowers to a product rotation in advance of price peaks at holiday times. In an attempt to buy low and sell high and/or to build inventories, merchants often hold back a portion of what would be the day's normal volume flow. Due to these delays, less than adequate care on the part of some operators in insuring a consistent rotation pattern, and the use of questionable storage facilities or procedures, product with less than normal shelf-life and/or

consumer-life enters the distribution system. Some type of date coding, as discussed in the last section, might be invaluable in this regard.

One could probably even question the industry's refrigeration units when examining potential areas for improvement in storage. Some operators use old or converted units which have not been carefully checked or maintained for adequate temperature control, freedom from harmful gases, e.g., ethylene, or sufficient humidity levels. Often, one sees cut flowers exposed to the vagaries of ethylene-producing fruits, foliage or decaying flowers. And some operators, most notably mass merchants, fail to employ even basic refrigeration for their flowers, preferring instead the more modest cost of using only buckets for flower storage.

On a more routine basis are questions concerning product handling. The spectra of handling techniques that exist in the industry themselves tell the tales of this problem area and provide the industry with numerous examples depicting opportunities for improvement. At the favorable end of one spectrum are the relatively super efforts of many of the larger product handlers who maintain temperature controls through precooling facilities used both upon receipt of the product they handle and again prior to its subsequent shipment (if necessary). At the opposite end of this range are handlers who, upon receipt of the product, simply stack their flowers in their warehouses, still in their shipping cartons, without so much as a cursory inspection. This author, after being told of a wholesaler's handling methodologies and rotation practices, inquired as to why product was allowed to remain stacked for days in a cooler in its original shipping carton, rather than being removed from the box and placed in water. The response tells much--the

operator said that the product would be better off if left in its box unopened for days than it would be if it incurred the physical abuse associated with removing it from its carton, placing it in water and subsequently repacking it when sold (Appendix A). While post-harvest technologists might praise the practice of leaving flowers dry for storage under the right conditions, few laudatory remarks would be due this wholesaler's staff if his assessment of its dexterity is accurate.

Other spectra of handling procedures can be as revealing. The Dutch destroy all unsold merchandise at their auction markets on a daily basis. At odds with this practice is the apparent subterfuge played out at more than one domestic wholesale flower market, in what this author was told was a common occurrence, whereby previously unsold merchandise was passed off as being the freshest available. Product remaining after the previous day's sales and which had been vased (in water) for overnight storage was removed from its storage container and placed back on the viewing tables specifically to give the appearance of being equal to the freshest stock.

Contrasts pervade the industry's handling performances. Staby and Robertson [1982] point out that Israel probably does the best job of temperature control of all the countries exporting major volumes of cut flowers. The Netherlands, the largest flower exporter, currently has a minimum number of temperature control facilities and practically no facilities for precooling. Flowers exported from the Netherlands and countries such as Kenya may not be placed into any refrigeration until they reach ports of entry.

The range of packaging methods is equally diverse. Some growers or shippers have established niches based on certain product packaging,

product shipping and/or product handling criteria [Staby, 1983]. Others use the fact that they simply do not pack product as their marketing ploy. One New England grower specifically notes that his clientele prefers chrysanthemums that have not been damaged by compaction into a shipping carton; hence, he places his cut flowers directly into converted garbage cans where they remain upright throughout the marketing process.

Life-extending technologies, however, are the central themes of most post-harvest physiology work in cut flowers. Correctly described, however, the applicable methodologies extend to both before and beyond the product harvest. Some of the concern must be considered species specific, for some species just naturally keep longer than others, e.g., chrysanthemums versus roses. Within any particular species, breeding may provide a large key to the flower longevity problem; some cultivars survive better than others. Some varieties do not ship well. Cultural techniques used during production also can be a prime determinant of post-harvest life. Professor Alex Laurie of Ohio State University has been quoted as saying that about 70 percent of the post-harvest longevity of a flower has been pre-determined at the time of harvest [Staby and Robertson, 1982].

Besides the storage and handling techniques already described, some relatively simple life-extending technologies also can play a big role in flower longevity, and here the industry has much room for improvement. Regular use of preservatives and preservative-like materials such as silver thiosulfate would provide a tremendous boost to flower longevity if uniformly adopted. Special machines for cutting rose stems under water (to prevent air bubbles from entering and

clogging the unusually susceptible stems) have been developed. Use of deionized water has also been shown effective in increasing flower longevity. Refrigeration must be considered a primary tool for increasing flower longevity. Yet many operators fail to employ even the most basic of these technologies. (These simple methodologies have been combined into a "Chain of Life" program sponsored by the Society of American Florists in an effort to further their adoption in the industry.)

Cost is often blamed for an operator's reluctance to adopt the proven methodologies. Yet Staby and Reid [1980] showed that, even with 1980's high cost of silver, it would only cost about 20 cents to make a solution that would treat over 800 carnations with a silver thiosulfate pulse program. One must seriously question the expense excuses when they are offered in light of this information. In any case, it is the contention of many that operators often fail to weigh correctly the slight costs on a per flower basis of many post-harvest techniques when compared with the benefits received by a satisfied customer.

Today it is only the pressures of the marketplace that coerce operators to employ various methodologies. If the everyday use of flowers becomes a reality, then more and more operators may move toward using various techniques as a marketing tool; however, with a ready clientele, there may be less pressure for adoption. Aggressive florists who view post-harvest physiological factors as an opportunity for greatly increasing their sales in light of a spurred demand will thrive from repeat business. Contrast this with the florist who concentrates on making that rare but distinctive impression when satisfying event-oriented demand; this florist is less likely to stress using good

post-harvest techniques. Here, flowers are not required to last but only to create a spectacular show for that brief encounter during the event.

As such, the industry may be forced to "police itself" to improve its performance in this regard. It has been proven that preservatives, deionized water, silver thiosulfate and other applications, as well as having the freshest possible flowers at the start of the distribution system, can greatly increase flower life after harvest. With the cooperation of all members of the market channel, this lengthened life span can be passed on to the consumer, who in turn is likely to reward the industry with increased sales. If this added longevity is, however, absorbed by those in the market channel, then any returns in increased patronage will probably be minimal. Time will tell which avenue the industry takes. In any case, it should be obvious that improvements in the post-harvest care of cut flowers are possible.

#### Industry Statistics

Data concerns, as a group, have to represent one of the biggest present and potential problem areas of the cut flower industry. First, the industry does not even have many of the data series which might be considered basic to agricultural economics research. Data relating to growers, wholesalers and retailers are poor in comparison with those found for market channel members in most other subsectors. Secondly, the industry does not seem to take advantage of those data sources which do exist or which could exist with only modest efforts. A third concern is the future of the industry as it relates to data. By knowing about



its history and its present, an industry can better plan for and improve its future; this is a major motive for data collection.

Comparing the cut flower industry with other agricultural subsectors points out the superficial nature of this industry's data resources. Cut flowers, in being only food for the soul, are not considered by many policy makers as being among life's essentials. Hence, the motivation for data collection may not be as intense as for some other commodity areas, especially among government planners.

Another perhaps telling feature is that the industry has what must be considered a less-than-structured market channel. As revealed in Chapter VI, it is difficult to detect a "normal" product flow through the distribution system. Such diversity alone contributes to the data problem, as operators may find it difficult to mount a cohesive effort for funding or for pressuring various data collecting agencies.

Wide variety may also be found in the product itself and among industry operators. The variance is most evident when the industry is compared with other agricultural subsectors. Witness the diversity which would be found in defining relevant cut flower industry utility functions, as attributes such as species, size, color, smell and others all reflect on consumer desires; contrast this with the dairy or egg subsectors. The less than perfect grades and standards policies of the cut flower industry also contribute to the data problem here. Comparative data from various markets are hard to assemble; substantiating any comparisons is even more difficult. For many commodity areas, only one or a few species are even of concern, and sometimes the product characteristics are lost early in the market channel, e.g., with wheat; both of these facts may ease the data burden for other subsectors.

The geographical dispersion among cut flower producers also adds to the difficulties in achieving concerted efforts for any data collection. For many crops, only a handful of states need be surveyed, e.g., for the citrus industry. Such geographical, market structural and heterogeneous product problems greatly add to the cost of any data collection efforts.

Should these diversities be overcome, the cut flower industry would still be at a disadvantage as far as data are concerned, as it does not now have a group of continuous data series that compares favorably with that found in other agricultural subsectors. A norm might be to expect continuous series detailing price and quantity data at the retail, wholesale and producer levels. From such data, demand and supply relationships could be derived. Ideally, such data would exist not only over time (i.e., a time series) but also over meaningful subsets of population, regions, market structures and/or crops, etc. (i.e., cross-sectional data). Although the cut flower industry has had some producer data series of this type in the Floriculture Crops reports of the USDA, the frequent changes made in the definitions of growers and in the numbers of states surveyed and crops reported (as seen in Tables 4-1 through 4-5) make using such data subject to question; indeed, such was noted in the discussions of the estimations of demand elasticities in Chapter V. (At this point in time, the inconsistencies of this data series may be a frivolous issue, as this report was terminated as one of the cost-saving measures instituted in 1982 by the Reagan Administration.)

At other levels, time- and cross-sectional data series detailing profits and the various performance ratios associated with balance sheets and operating statements would be helpful. Such data are

available for each level of the market channel in many other subsectors. Furthermore, most industries have conducted regular and detailed studies indicating consumer preferences and purchase frequencies; although the cut flower industry has had occasional studies conducted on these topics, their results have often been questioned. Finally, data series reflecting situations affecting but not immediately a part of the industry are considered among the basic needs of market researchers; import and export data, data on substitute and complementary products and data reflecting any other externalities would be appropriate in this regard.

A second concern is that relating to industry commitment. The cut flower industry does not seem to take advantage of many of the data sources which do exist or which could readily exist given some commitment (by individuals, industry leaders and/or organizations). A perfect example was the noteworthy lack of outcry that became evident when the USDA announced the termination of the Floriculture Crops report in 1982. Although this series was far from perfect, it was the only series of consequence that the industry had. Furthermore, the series had extended back for over 25 years. (The complete data set appears in Appendix D.) Yet about the only persons to take note of this event in the trade press were university researchers, and some of these said "Goodbye and good riddance!" Others begged for the industry to get excited. The USDA even proposed to continue the series if a partial funding commitment was forthcoming from the industry. Several other agricultural subsectors protested and had their equally threatened reports continued. The biggest response from the cut flower industry was one of silence.

This lack of commitment goes beyond monetary and political concerns, however. Many operators have access to tremendous data banks right in their own sales and production records. Yet, analyses of these data are often disregarded. It is as if operators are saying they are too busy raising and selling the crop to worry about making money. This author is aware of several attempts by various university personnel to conduct studies relating to the cut flower industry. Producers often claimed ignorance as to their true production costs.

The commitment problem has still another facet. Many operators choose to ignore the results of research which is widely published. Such research is often conducted by the wire services, other industry organizations or university personnel. While some of this research may rightfully be subject to question, some industry operators simply treat all findings with disdain.

The future of cut flower statistics looks mixed. Floriculture Crops reports have been terminated after being issued for over 25 years. The Market News Service, which has reported on flower prices since 1967, has begun to charge for its market price reports as of August, 1982; this too has led to a reduction in the dissemination of market information. Some Market News Service offices have been closed. In these respects, the statistical outlook appears dim.

However, there is hope. If the industry passes the Floraboard referendum scheduled for the late summer of 1983, there is the possibility that some research funds may be allocated to data collection and reporting. Some notable market research has been conducted by product commissions that have been established by other research and

promotion acts, e.g., that of the Cotton Board. The lack of USDA statistics may also spawn others to collect and publish data.

On another plane, the floriculture industry will probably mature in its commitment to data. The small business atmosphere of the industry has perhaps been one of the culprits of the sometimes lackadaisical attitudes toward data. Today, computer technology is even entering the sphere of the small businessman. Furthermore, with an ever increasing number of larger business ventures operating in the subsector, whether they be multi-shop firms or the even larger mass marketers or corporations, the importance of industry statistics will probably increase. The competitive business atmosphere of the modern economy may also force firms to account more accurately for their actions.

The importance of data cannot be minimized. Not only are they the key to research, which hopefully is aimed at improving the industry's knowledge of itself, but data can also provide keys to improving market performance. The section on the equality of market behavior in Chapter VII pointed out the importance of market information in maintaining a competitive environment in the industry. Statistical market reports detailing price movements and quantity flows can go a long way toward sustaining free movement of commodities and (according to hypotheses H39 through H42 of Chapter II) improving consumer satisfaction while reducing market price dispersion.

Only time will tell the true future levels of statistics in the cut flower industry. One can only hope that no further cuts are made. Perhaps with time, improvements to the currently deplorable data conditions will materialize.

### Educating the Industry and the Consumer

Accurately assessing the levels of knowledge of the industry and the public with respect to cut flowers is difficult to do. Nevertheless, from what this author has observed, the industry can probably go a long way toward enlightening both consumers and industry personnel about necessary product information. Educating the public with regard to the value of flowers should be a major goal of the industry. Informing all operators about both the basics and modern technologies can only increase the level of the industry's sophistication while improving consumer satisfaction.

The industry is composed of mostly small businesses. As previously noted, nearly one-third of the retail florists who operated the entire 1977 Census year did so with no paid employees and about 59 percent operated with two employees or less [U.S. Bureau of the Census, 1977 Census of Retail Trade, 1979]. In many instances, this small business atmosphere affords little time for shop personnel to keep pace with current trends in the marketplace. Not only is there sometimes an unconscious distancing of operators from industry norms regarding design, technology or business practices, but it is often impossible for operators to attend the meetings, conventions or trade shows which offer many of the opportunities for continuing education. If entrepreneurs do make an effort to get and stay informed, problems often develop at lower levels of the organization. Employees who make consumer contacts often remain poorly informed and convey improper information to the buying public.

Furthermore, the entrepreneurial nature of the cut flower industry, along with the generally competitive atmosphere and the sometimes minimal investments that are required for establishment, often allow or perhaps even encourage the establishment of less than qualified persons in the subsector. The lack of sophistication that often results in such instances is frequently evident. Unfortunately, the subsector may become permanently blemished in the eyes of the unsuspecting consumer who is victimized by less than professional service.

Contrasting with many countries of Europe, U.S. florists are generally not regulated in any way. In parts of Europe, florists must be licensed as professionals and must serve apprenticeships [Nicholas, 1983]. To this author's knowledge, Louisiana is the only state in the U.S. that currently requires florists to be licensed professionals, although some states will certify persons as professional florists [Kent, 1981]. The closest this industry comes as a whole to licensing of florists must be the qualifying procedures used by the various wire services for shop membership. However, these vary tremendously from service to service.

Still, there are opportunities for even the most shop-bound florist, wholesaler or grower to expose himself to modern trends and technologies. Most of the trade magazines include at least occasional articles on design trends and techniques, trends in wholesaling and new methodologies for growers; all keep a watch on newsmaking events in the industry. Often local organizations will offer tours of member installations as part of their meetings, and meetings are often scheduled for off-peak times of the day or year. Local extension personnel and/or

state extension specialists often communicate through newsletters and are frequently available for personal consultation.

Educating the public is another matter that requires a continuous and concerted industry effort. The result of an educational/promotional effort that encourages the public to buy flowers on a regular basis would surely help to ease the peak and valley turbulence currently plaguing the industry (see Chapter V). However, a good portion of the consuming public does not even buy flowers [Abrams, 1980]. For this group, some basic education as to the value of flowers might be appropriate.

Truly a major aspect of the educational void afflicting both the industry and the public must be considered horticultural in nature. Both industry and the public need to be well versed on the proper methods of flower care appropriate to their respective portions of the market channel. The public must particularly be educated as to the expected longevity of particular floral species, and both florists and consumers should be encouraged to balk and/or shop around when inconsistent results are realized. Value might also be an appropriate educational subject as there is a great diversity of prices apparent in some cities (Chapter VII). Variety could be a topic of import as well, both as it relates to the selection of colors and species and to the creative design possibilities that are to be found in the marketplace.

In simple terms, this author's experiences suggest that too much of the public and at least a noticeable segment of the industry have been poorly informed about cut flowers. Not until the misinformation is corrected either by product experiences or, more probably, by industry dissemination of accurate data can the subsector expect to benefit from



the increased sales levels that would result from a nationwide appreciation of the value of flowers. The task is great. The results can be even greater.

Influence of Alternative Laws, Policies and  
Institutions on the Organization, Control  
and Performance of the Subsector

At first impression, one might anticipate that there would be little influence on the subsector posed by laws, policies and institutions as the subsector is comprised mostly of very small businesses. Yet, it is precisely this small business atmosphere that sometimes puts the cut flower industry at the mercy of legislation, policies and institutions. Often the subjection must be considered inadvertent, as forces may not be aimed directly at floricultural enterprises. Occasionally, however, groups or organizations within the industry promulgate their own pressures in order to achieve changes deemed beneficial to the industry or their particular industry segment. (Floraboard provides a prime example here.) In light of this chapter's title, it is also conceivable that some future occurrence could influence the organization, control and performance of the subsector. This section will review such present and potential forces.

Included among industry forces must be the legislative programs of organizations such as the Society of American Florists and Ornamental Horticulturists (SAF). The SAF closely watches the happenings of the federal government, monitoring events and legislation which may directly or inadvertently affect the cut flower industry. International trade questions, energy and transportation issues, tax laws and legislation pertaining to the USDA are often of key interest. The SAF also sponsors

an annual floricultural day on Capitol Hill where industry members make their influences felt as they visit with congressmen about issues and concerns.

The Society of American Florists is not the only industry agent dealing with government. Other organizations, e.g., Florists' Trans-world Delivery Association (FTD), Roses, Inc., etc., also interact with various government agencies. FTD, for instance, has often offered retailers' views on pending legislation, trade disputes and the like. Various grower groups such as Roses, Inc., have made their views known on various issues, most notably those involving imports.

The legislation allowing the industry to establish a Floraboard must be highlighted both as an example of legislation of major consequence, as well as a law of tremendous potential effects. Passed as part of the 1981 Farm Bill, this law directs the USDA to seek industry input regarding the possible establishment of a research and promotion act. The grower referendum on the proposal, scheduled for the late summer of 1983, will decide whether or not growers approve of the collection of funds for the purpose of researching and promoting floricultural products. The Floraboard Development Committee sponsored by SAF's American Florists Marketing Council has done the major work in getting this enabling legislation sponsored and passed through Congress. As noted elsewhere, the establishment of Floraboard will probably result in increased promotional efforts aimed at easing the peak and valley patterns of demand in the industry. Such would certainly be a major force in improving industry performance.

Various agencies of the U.S. Government must be cited for their potential effects on the industry. The Interstate Commerce Commission

(ICC) and the Federal Communications Commission (FCC) are among the agencies which can affect the wire service industries. The FCC's control over the telecommunications network must be noted in that its decisions can influence even a non-wire service-affiliated firm through its telephone services. The ICC can greatly affect the entire industry as well through its regulation of interstate transportation services.

The U.S. Bureau of the Census affects the industry through its collection and publication of data related to wholesalers and retailers in the Census of Wholesale Trade and Census of Retail Trade, respectively. The Census of Agriculture and the decadal published Census of Horticultural Specialties (actually a part of every other Census of Agriculture) also emanate from the Census Bureau.

Naturally, the USDA must be considered an institution of immense importance. The research provided by the USDA laboratories in Beltsville, Maryland, as well as the USDA-sponsored work at the Land Grant colleges and research stations nationwide, must be applauded. The Department of Agriculture is also responsible for the Animal and Plant Health Inspection Service which inspects imports along with agents from the U.S. Customs Service (of the Treasury Department). The plant inspectors look for possible disease or insect infestations, while the customs agents search for contraband and assess duties. The USDA's Agricultural Marketing Service also provides, in conjunction with various state departments of agriculture, a continual monitoring of import flows and domestic market activities through its Market News Service.

Various agencies of the U.S. Department of Commerce address trade issues in general terms (as opposed to the flower census reported by

the USDA). As imports comprise a large share of the U.S. supply of cut flowers, this agency can have a tremendous effect on the subsector. In this regard, the stated or observed trade attitudes of the Executive Branch, e.g., efforts to liberalize trade restrictions, programs aimed at promoting foreign development, etc., can greatly affect industry supplies and, obviously, product prices.

Other government agencies can influence and have affected the subsector as well, although their efforts have often not been particularly aimed at floriculture. The Small Business Administration can alter the industry through its loan policies. The Environmental Protection Agency can influence pesticide use. Many growers have come into contact with the Occupational Safety and Health Administration (OSHA) which is concerned with safety in the work environment. In many instances, OSHA has flexed its muscles, especially with regard to pesticide application, maintenance of the greenhouse structure and general conditions of machinery and other facilities. The Justice Department has also been involved with industry politics, most notably involving restraint of trade issues among the wire services (especially the industry leader, Florists' Transworld Delivery Association (FTD)). One certainly cannot overlook all of the implications that various changes in the tax laws might have; everything from energy tax credits for the installation of conservation equipment to changes in social security taxes and from depreciation schedules to tax credits for employing disadvantaged youths can affect the health of the industry's firms.

Local governments may also affect those operators falling within their jurisdictions. The issue of the licensing of floral designers has surfaced on more than one occasion; traditional retailers have related

such proposed legislation to consumer protection, while mass marketers have claimed a restraint of trade. In more than one instance, state "Greenbelt" laws regulate tax assessments for all agricultural lands, including those used to raise cut flowers. In some cases, local tax or zoning laws can moderate development and/or the conversion of lands from agricultural to residential or commercial uses.

Labor unions have a tremendous potential impact on the industry. As the average grower's size has continued to increase, labor unions have recognized the potentials for organizing workers. As a result, the first labor organizing activities in the industry outside of the transportation realm have occurred in recent years. If the trend continues, unionized greenhouse crews could materially affect the costs of flower production. As labor is usually among the highest factor cost categories, this could be important. Strikes by organized transportation and/or handling employees could also substantially pressure the industry.

Consumer groups have on more than one occasion influenced the well-being of many industries in the past. Witness the beef boycotts of the late 1960s and early 1970s as housewives complained of high meat prices. In some regions, these boycotts led to noticeable reductions in quantities demanded. Several produce items have also been subject to consumer boycotts in the past, e.g., grapes, lettuce, etc. Drives aimed at ostracizing products from certain countries have also formerly been waged. If such an effort were directed against a major cut flower supplier, the industry would certainly take notice. It is not, therefore, inconceivable that the cut flower industry may be subjected to the whims of a particular consumer group in the future. (Some

industry observers might suggest that florists are already placed at the mercy of newspaper editors at Valentine's Day every year; articles frequently appear bemoaning high flower prices [Golden, 1981].) SAF's American Florists Marketing Council plays a role in trying to monitor current events and industry publicity for adverse affects.

Perhaps the major opportunities for improvement in this area might be for the various industry groups to learn to wield even greater political power. Organizational and personal pressures can be very useful in attempts to sway legislators and government agencies toward one's way of thinking. As the industry operates in a small business atmosphere, this can be extremely important. It is unfortunate when the industry is forced to adapt to changes made in laws, policies or institutions affecting a group of which the cut flower industry is a subset; it becomes embarrassing when such changes take place without industry knowledge or without the policy makers having received sufficient industry input.

### Summary

This chapter has reviewed five areas which present obvious opportunities for improved performance in the subsector. First, the issue of grades and standards was discussed; it was concluded that any forthcoming increase in demand for cut flowers would require a re-examination of flower grades and standards. Secondly, post-harvest physiology was reviewed as it relates to storage, handling and life-extending techniques. The deplorable state of industry statistics provided the third area of analysis, while industry and consumer education was the fourth topic area covered. Finally, the influence of alternative laws,

policies and institutions on the organization, control and performance of the subsector was discussed; many agencies of government affect the industry, often inadvertently, and several groups or organizations both within and outside of the industry have potential for creating pressures for the subsector.

## CHAPTER X SUMMARY AND CONCLUSIONS

This study has used a commodity subsector analysis to detail the U.S. cut flower industry. This approach, as outlined in Chapter II, evaluates the industry conduct, structure and performance in an attempt to discern where the industry is at present and to suggest probable options for future direction. The analysis outlined ways in which conduct and performance could be improved and explored present and potential problems of the industry.

### Working Concept of Commodity Subsector Analysis

Chapter II focused on commodity subsector analyses and related research. A survey of current literature, based mostly on the work of the North-Central Project 117 Food System Research Group (USDA and 18 Land Grant colleges cooperating), was offered. Included in this review of literature were 42 hypotheses. No attempts were made to test the hypotheses in the course of the study; commodity subsector analysis methodology does not lend itself to such testing. Instead, the hypotheses were used throughout the study to provide further insight to the discussion.

### General Characteristics of the Product

Horticultural characteristics of the major cut flower species (standard and miniature/spray carnations, standard and pompon



chrysanthemums, gladioli and hybrid tea and sweetheart/miniature roses) and others were described in Chapter III. Factors which affect production or marketing of a crop, e.g., timing sequences in production, photoperiodic response, labor requirements, colors and varieties available, durability in handling, etc., were noted. Inputs, including cut flowers, cut foliage and other non-natural items as they collectively contribute to flower arrangements, were described. The chapter also included a brief introduction to the quality specifications as used in the industry and concluded with a summary of other product differentiating modes as used by individual growers, wholesalers, retailers and wire service organizations.

#### Supply

U.S. cut flower supply was outlined in Chapter IV. Trends in domestic production, imports and the effects of world markets were presented. U.S. cut flower production has declined for most of the major species. Production of standard carnations, standard and pompon chrysanthemums and snapdragons has dropped; less definite trends can be established for the production of gladioli and hybrid tea and sweetheart/miniature roses. Production of miniature/spray carnations and anthuriums appears to be increasing. Nominal values of cut flower crops have generally risen, but the real values have dropped for most species. Again, miniature/spray carnations and anthuriums provide exceptions.

The numbers of cut flower growers have dropped for most crops. Greater output per grower is a general trend. The average grower is also typically responsible for more production area than in the past.

The international contributions to domestic supply represented a major industry change during the 1970s. By the late 1970s, foreign growers were accounting for the majority of carnation and pompon chrysanthemum supplies; lesser but noteworthy market shares were reported for standard chrysanthemum and hybrid tea rose imports. The U.S. rose industry had exhibited some resistance to incursion from imports relative to several other major species; yet 9 percent of the domestic rose supply was imported by 1980. Gladiolus supply remained almost exclusively the result of domestic production efforts.

As a result of available supplies (and perhaps demand) per capita consumption in the U.S. fluctuated for some crops during the 1970s. Per capita consumption of carnations rose nearly half a unit annually to 3.5 flowers, but the path of this jump was not smooth. Standard chrysanthemum consumption was perhaps supplanted by pompon chrysanthemum consumption, as per capita use dropped 25 percent to 0.5 blossoms for the former but nearly doubled to one-third of a bunch for the latter. Rose consumption remained virtually unchanged during the 1970s, holding at about two blossoms per person. Gladiolus consumption was almost halved, dropping to about 0.7 spikes per person by 1980.

The geographic changes of the cut flower industry were also revealed in Chapter IV. A trend towards centralization of production was noted, as the major cut flower producing states increasingly accounted for greater portions of total U.S. production. The movement to the cities of the majority of the U.S. population has led to some centralization of the retail segment to urban areas. Wholesalers have also focused on metropolitan areas, following their retail clients.

Growers have often left urban areas in attempts to avoid zoning problems and to find less expensive land for production.

On the international level, some shifts affected U.S. and world markets. Colombia, the Netherlands and Israel are the largest producers among many operating on the international trading scene. These three countries contribute heavily to the U.S. market; Colombia supplied about 90 percent of U.S. cut flower imports in 1980. As such, the U.S. has essentially entered the world market for cut flowers. The U.S. is only one of many major consumers, however. Factors such as relative prices, price stability and steadiness of demand will affect the ability of the U.S. to attract foreign supplies.

#### Characteristics of Consumption

The consumption of derived products, elasticities of demand and commodity price patterns were topics covered in Chapter V. In the initial section on consumption of derived products, product forms of cut flower use, e.g., cut flower arrangements, boxed or wrapped flowers, hand-held bouquets, boutonnieres and corsages, etc., were discussed. The market outlets for cut flowers were described; traditional retail florists still account for approximately 90 percent of cut flower sales dollars. Mass marketers are gaining in importance, as are many other non-traditional outlets. The alternative uses of consumption were examined, and the rates of growth of each were noted. Trends suggest a declining importance of funeral/memorial business and increased relevance of holidays and activity associated with the everyday use of flowers. Approximately half of the traditional florist's sales are directly related to cut flowers.

Retail florist sales have increased in nominal terms. When examined in real dollars, sales have not always kept pace with inflation. The New England, Mid-Atlantic and Pacific states especially have had stagnate per capita sales in the retail florist shop. However, mass market operators have been particularly aggressive in establishing cut flower sales units in these areas.

Substitute products for cut flowers and the substitutability among various species were discussed. The list of substitute products is growing and may now include candies, perfumes and other small gifts, singing telegrams, balloons, wines, greeting cards, fruit baskets and others. Some florists have included these among their inventories. Other floricultural items can also affect cut flower sales; these include natural items, such as foliage and potted blooming plants, and "permanent" items, such as silk flowers. The substitutability among the various species was discussed. While some flowers seem most appropriate for certain occasions, e.g., roses for Valentine's Day or white flowers for weddings, there does seem to be a certain degree of leeway for florists in choosing flowers for arrangements. Species selection often becomes determinant on the florist's personal preferences or market determined choices. Wholesalers do not usually have the same liberties, as florists are generally not satisfied with substitutes.

Chapter V continued with an analysis of the price elasticities and flexibilities of demand. Product characteristics were discussed as they suggested various elasticity findings. It was concluded that demand for individual species by florists was probably more elastic than demand by florists for the commodity group as a whole. For the consumer, demand for flower arrangements, especially when considered for specific

occasions, was deemed to be inelastic in nature. The impulse nature of most mass market sales would suggest the finding of a more elastic demand than for sales at the traditional retail florist.

A two-tiered approach was used to examine cut flower demand. As species are often mixed when used by the retail florist and as the mixture used is largely based on the florist's preferences, the first demand explored was that of cut flower arrangements at retail (as opposed to a retail demand for various species). Secondly, the demand for individual species at the wholesale level was investigated.

Problems were encountered during the analysis of retail cut flower arrangement demand. Many of the factors influencing such demand were highly correlated. Rates for births, deaths, marriages and hospitalization all moved in similar patterns and were interrelated with time. During the last 15 years, the events associated with these rates have accounted for between 64.7 percent and 74.0 percent of traditional retail florists' sales. The number of units and sales were highly correlated with the Consumer Price Index as well. Hence, time was used to try to capture all of these associated influences.

The final model for cut flower arrangement demand regressed the number of flower arrangements per thousand persons against the average deflated price of flower arrangements and the inverse of time. Results indicated a strong relationship between the number of units and time; however, there was no evidence of a price-quantity relationship (i.e., there was little statistical confidence that the price parameter was different from zero). The elasticity when calculated at the mean price and quantity of the data set yielded a highly inelastic result. A plotting of the price-quantity relationship as determined by the model

showed that the number of flower arrangements consumed would increase with time but at a decreasing rate. The rate of increase in consumption did not appear to vary materially with price levels although, as would be consistent with economic theory, higher unit sales were predicted at lower prices.

Due to the assumed inelastic nature of cut flower supply, flexibilities were used in the analysis of wholesale demand for cut flower species. Both flexible and inflexible price flexibility coefficients were found for many species over the observed data range; only flexible results were discovered for other species. At the means of the data set, the investigation revealed inflexible price coefficients for all species except for domestically produced standard carnations. When data from recent years were used, inflexible results were generated for all species except miniature/spray carnations. The generally inflexible determinations imply elastic demand elasticities, suggesting that florists alter the quantities demanded of the various species as prices fluctuate. It is hypothesized that greater versatility of a flower species (as used by the florist for various arrangement types) might lead to a relatively more inelastic demand, while the least versatile varieties would yield a relatively more elastic result.

Chapter V ended with a discussion of commodity price patterns. Using USDA Market News Service reports, weekly cut flower prices were averaged to generate monthly prices for the major species across four wholesale markets and three shipping points over three years. Results were plotted to depict seasonal wholesale market and shipping point price patterns. Holidays were found to affect the price patterns with

the months of February, May and December capturing most of the price highs. Summer months typically accounted for the price lows.

From this analysis, wholesale marketing margins were derived. Wholesale marketing margins often peaked in terms of dollars at the same time that wholesale market and shipping point prices were highest. However, wholesale marketing margins were often higher in percentage terms when market prices were lower. The average of wholesale marketing margins for all species was 42.8 percent of the wholesale price.

Retail prices were discussed as well in this analysis. Although nominal flower arrangement prices (for the traditional retail industry) have risen steadily since 1950, real prices have fluctuated. A study of prices for flower arrangement types revealed that the over 300 retail florists surveyed were using approximately 83.0 percent, 79.5 percent and 75.0 percent marketing margins for arrangements of carnations, sweetheart roses and hybrid tea roses, respectively. A weighted retail marketing margin of 79.2 percent was found for the traditional florist shop. (Mass marketers reportedly used a 35 to 50 percent gross margin range for cut flower sales.) Chapter V concluded with a brief mention of charges for associated services at retail. Traditional retailers often apply delivery or other service charges to their orders. These charges appear on top of the flower arrangement prices studied, indicating the possibility of even larger retail marketing margins.

#### Subsector Organization

Subsector organization was the concern of Chapter VI. The chapter began with a description of the production and marketing channels. The roles of the various participants at the grower, wholesale and retail

levels were outlined, and a picture of the subsector's market channel was provided. Data detailing sizes and numbers of operators at various sales volumes were included.

The chapter offered brief descriptions of the time of travel of flowers through the system, the extent of contractual arrangements and the communication and change in the subsector. Travel time ranges from minutes to weeks, depending on crop, operator, source, destination and market conditions. Contractual arrangements, initially more prevalent among mass marketers, are most common for potted plants and bedding plants, especially for holiday/seasonal merchandise. Change is often slow to occur in the subsector, except where one division of a vertically integrated firm honors requests for altered procedures from other divisions, i.e., where communication among market channel members is less inhibited.

The structure and characteristics of the buying and selling industries at each level in the subsector represented the second major topic of Chapter VI. Literature suggested that relevant markets for retailers were in areas where at least a 10,000 persons-per-florist ratio could be maintained. Census Bureau data indicated that there were only 7,384 persons per traditional retail shop in 1977; this represented an increased concentration from the one shop-per-8,539 persons ratio in 1972. There were 29,375 retail florist outlets, over 2,000 wholesalers and 3,900 flower farms in 1977.

Growers appeared to be at the most concentrated market level. The top 5.7 percent (222 firms) of U.S. growers accounted for over 50 percent of domestic crop sales, while only 28 percent of all grower establishments had nearly 87 percent of industry sales.



Among wholesalers, the top 153 firms (7.3 percent) handled over 42 percent of wholesale sales, with the top 41 percent of all wholesalers taking responsibility for about 84 percent of sales. As for retailers, the top 25 percent (over 7,200 outlets) accounted for 62 percent of sales, while the top 46 percent (nearly 13,500 outlets) made 81 percent of industry sales.

Entry and exit conditions were deemed free at all levels of the market channel, but the costs of establishment vary widely. Retailers can establish for very little relative to others in the market channel; growers have by far the largest capital requirements. Growers frequently face other pressures when entering the industry, including those involving water, zoning and land and labor supplies.

The rates of change in technology vary with the subsector level. Changes at the retail level are so few as to go almost unnoticed. Wholesalers have experienced great changes that have involved product care, transportation and handling, merchandising and product assembly. The largest number of technical advances has probably occurred at the grower level; changes here have included a host of advances in energy conservation, cultural methodologies and greenhouse operating techniques. Still, cut flower growers are often distraught at not being able to adopt many improvements applicable in other fields of floriculture. Yet, the cut flower industries in other countries are often more technically advanced than the U.S. industry.

Cost functions were also described in Chapter VI. The retailer's cost structure involves mostly variable costs. The cost of goods sold at retail in one survey was a median 44.2 percent of sales. (Sales growth barriers were found in the \$200,000 to \$299,000 range for

traditional retailers.) Mass market costs involve mostly variable costs. Among mass marketers, over one-fourth of those surveyed had sales of floricultural items exceeding \$1,250 per week. Wholesalers' costs are about half payroll and about half overhead and other expenses. Total operating costs average 25.8 percent of sales at the wholesale level. The grower incurs many fixed costs and returns can be minimal. Crop sales value in 1981 varied from \$1.31 to \$4.26 per square foot for the major cut flower species; reports from a southern Michigan greenhouse heating experiment in 1980 suggested that heating costs alone may consume more.

Financing and credit characteristics were described. They are not considered very different from those found in other industries.

The specialization and diversification of firms in the industry were outlined. A wide range in the degree of specialization or diversification in species was found at the grower level. Although most wholesalers carry a broad spectrum of merchandise, there are some operators who tend to specialize in their inventories. At the retail level, some shops specialize in specific services, but no known shops exist which inventory only a selected species.

Types of firm diversification, integration and form of legal ownership were discussed as well. Vertical integration is prevalent as many firms are currently bypassing middlemen. Both vertical and horizontal integration occur, but attempts by large corporate conglomerates to enter the industry have been met with mixed success. Proprietorships are common at all levels of the industry. At the wholesale and grower levels, many corporations also exist, but many of these are held by family members or partnerships.

The last major section of Chapter VI was concerned with subsector coordination. The wide variety of alternative market channels made the coordination task extremely complex. Much of the coordination relies on "blind" or "almost blind" sales where operators rely on average sales occurring on the average day. Uncontrollable factors often plague industry coordination efforts; these include the weather, decisions of wire services or large firms and others.

Conflicting goals also hamper coordination efforts. Grades and standards and the question of freshness dating or guarantees were cited as two problem areas. Other issues of debate include profit maximization at the expense of other market channel members, imports, mass marketing and general competitive behavior.

The importance of coordination was stressed in light of the perishable nature of the product, the production process and transportation and handling. A discussion of coordinating mechanisms and elements, including exchange arrangements, information, collective organizations, prices, predictions about future market conditions and attitudes of industry decision makers, finished this chapter.

#### Subsector Behavior and Performance

The past and present behavior and performance in the subsector was the topic of Chapter VII. An initial discussion of inventory and risk management practices revealed that retail and wholesale operations were more closely aligned than were operations of growers. The former groups share a materials handling function, while growers are the producers. Retailers and wholesalers have minimal investment requirements when compared with the extensive requirements of the grower. Growers also

have greater costs of operations, and because of their having to contend with nature as part of the production process, growers often experience more risk.

Pricing as it relates to behavior and performance was the next area outlined. Nominal prices have risen while real prices have dropped over the last 25 years at the grower level. It was noted that market prices often vary for like product between shipping points, between wholesale markets and based on sources of the product. Some patterns were discerned for market prices based on the states which have excess production relative to demand and those which must import produce to meet demand.

Price variability was discussed, and the results of a study of retail price variability were disclosed. Prices became more variable with time. Price variability seemed to increase with the population of the city surveyed, but a direct link between variability and population could not be proven. Although statistically little variation was found, it was concluded that the consumer may do well to shop around. It may also be appropriate for retailers to advertise the advantages of their product's value.

Value added and profits were compared for the different subsector levels as data allowed. Approximately 76.5 percent of the final retail price represents the market channel's value added (beyond the grower level). Traditional retail florists account for about 55 percent of the value added for all sales; however, retailers may use a gross margin of as high as 83 percent for cut flowers sold. Wholesalers reportedly use between a 25 percent and a 30 percent gross margin on sales. The value added per employee at the wholesale level was greater than that at the

grower level; both wholesalers and growers contribute more to the value added on a per employee basis than does the retailer. When considering the value added per \$1,000 of assets, the retailer exceeds other market channel operators. Retailers may contribute as much as four times the value added per \$1,000 of assets as does the grower.

Profits as a percentage of sales were found to average between 3.2 percent and 3.6 percent at the traditional retail level, run about 4 percent at the wholesale level and tally approximately 9.5 percent at the grower level. Traditional retailers had profits as a percentage of assets ranging from 4.7 percent to 12.3 percent and profits as a percent of net worth varying from 12.5 percent to 39.2 percent for the data studied. At the wholesale level profits ran about 8 percent of assets and 18 percent of net worth. A crude approximation for profits as a percentage of fixed assets at the grower level yielded a figure of 16.9 percent. Data were unavailable for determining profits as a percentage of net worth at the grower level.

Product losses in the subsector were also discussed in Chapter VII. As much as 5 percent of the product grown may not be marketed. Another 20 percent of what gets harvested may be unsuitable for final sale. Mass marketers provided the only known survey of retail shrink; about 43 percent reported shrink of 6 percent to 10 percent, while 31 percent claimed shrinkage of 5 percent or less. Another 10 percent of those surveyed reported losses of 11 percent to 15 percent, and 15.5 percent of the mass marketers surveyed reported greater than 15 percent shrink. However, mass marketers probably experience much greater shrink than traditional operators. Intentional non-marketing of product and resource underutilization also contribute to losses in the subsector.

A discussion of transaction costs in the industry revealed that they usually involved transportation and communication. Such costs can be significant. For example, the transmission charge, delivery charge, service charge and sales tax charge can add as much as one-fourth to the consumer's final cost of a wire service order.

Progressiveness at each stage of the subsector was summarized. Breeding work strives to improve product. Advances in propagating techniques have aided industry performance. The application of various species has increased variety. Various innovations throughout the market channel have improved coordination, including some relating to production processes, transportation and handling, post-harvest care and market outlets. As important as any technological changes have been those involving organization and coordination; the wire services' importance here in the installation of computer terminals linking the industry is unmatched.

Major consideration was given to analyzing the extent to which supply offerings of sellers match the demand preferences of buyers. The accuracy with which demand preferences are perceived at different stages was questioned. The ability of participants to influence supply and demand and the inflexibilities of resources, together with poor coordination of the market channel, contribute to product shortages and surpluses. The inelastic nature of retail demand and the perishable nature of the product both contribute to the supply-demand matching problem.

It was concluded that the grower level of the subsector probably takes the most risks. Growers have the largest investments. The cost of grower operations is high. There is risk in timing provided by

Mother Nature. At the wholesale and retail levels, operators can merely add to or subtract from orders as demand necessitates.

The competitive environment in the subsector was also outlined in Chapter VII. The production segment seems more concentrated than others; imports are providing increased competition, however. At retail, opportunities may be increasing in total as the competitive environment expands to include non-traditional outlets. Middlemen are increasingly getting bypassed; they may be in a weakened position relative to their historical performance. Firm entry and exit are relatively free but may be more complicated at the production level than at retail or wholesale levels. Market information is available but not uniformly accessible; as data sources disappear, the ability to afford consultants or special newsletters may play an increasingly important role. The industry operates at a fairly competitive level, all things considered.

Conflict was discussed. Risk, changing market structure, imports, grades and standards, product prices and the product itself are all sources of industry debate. Advertising and promotion currently supply controversy as the industry argues the merits of Floraboard, a proposed research and promotion act.

The last section of Chapter VII discussed forces causing change in the organization and performance of the subsector. The wire services, the Society of American Florists and other trade groups, Floraboard, imports, mass marketing and its potential for increasing the impulse sales segment of the industry, energy shortages, transportation and freight handling, post-harvest physiology, changing market channels and others were discussed.

### The Future

Chapter VIII was the chapter in which the author shared his perceptions of the future characteristics of the subsector, given its current pattern of evolution. The trend towards centralization of production is expected to continue with some local production surviving, especially for the more perishable crops. Imports will remain a key product source, as the market for flowers will increasingly become a world market; improved transportation and handling will contribute here. The struggling florist will continue to rely on a limited number of varieties as a means of controlling inventory and keeping product shrink at a minimum. Larger and more progressive florists will expand their varietal selections. Computerization will help to link the industry and will improve coordination efforts.

The number of growers in the U.S. will continue to decline. Middlemen will be increasingly bypassed but will remain an important link in some areas, especially for rural retailers. The number of retailers is expected to decline but the number of outlets is expected to rise dramatically; the industry will be dominated by multi-unit firms which may service branch stores from central design centers. Less-than-full-service outlets will be the rule; the equivalent of today's full-service traditional retailer will be the exception. Mass marketers will continue to expand their interests in cut flowers and will join with or perhaps set the pattern for other retailers as normal floral outlets. The differential between traditional and non-traditional retailers will thus be largely erased. Only a few completely full-service outlets will



survive to fulfill the design requirements for extraordinarily special occasions such as weddings.

Demand for flowers will be spurred and Americans will broaden the list of occasions for which flowers will be used. Several occasions which now dominate will continue to decline in importance. Rising demand may result in increased competition in the industry.

### Industry Problems

Present and potential problems in the industry were discussed in Chapter IX. Five major problem areas--(1) grades and standards, (2) post-harvest physiology, (3) industry statistics, (4) educating the industry and the consumer, and (5) the influence of alternative laws, policies and institutions on the organization, control and performance of the subsector--were addressed.

The issue of grades and standards was presented and augmented to include freshness dating, indications of storage methodology and packaging considerations. Any forthcoming surge in consumer demand will warrant a re-examination of the grades and standards issues.

Coverage of the post-harvest physiology issue included a discussion of storage, handling and life-extending methodologies. The range of alternatives employed by various industry operators for each of these areas points out the potential improvements possible.

The deplorable condition of industry statistics was discussed. The cut flower industry does not have many of the data series considered basic to agricultural economics research. The industry does not seem to take advantage of data sources which exist or which could exist with only modest efforts. The future currently looks bleak as many of the

series have been cut and the future of others remains uncertain. Floraboard may assist the industry in this area, if passed.

Educating the industry and the consumer should be of prime importance. Product misinformation plagues the industry both among operators and consumers. A spurring of demand may require a concerted industry effort to police itself and to educate the consumer as to product care, expanded longevities of various varieties and the values of particular species and of flowers in general.

The small business atmosphere of the industry often places it at the mercy of legislation, policies and institutions. Results frequently affect the organization, control and performance of the subsector. The decisions of many government agencies on the national and local levels have potential to alter the industry, as many subsector operations have facets falling under government control, i.e., transportation, communications, etc. Labor unions, consumer groups and others may play a role in the future. The industry needs to learn to wield greater political power.

#### Final Thoughts

The author hopes that this commodity subsector analysis benefits the industry. The analysis of conduct, structure and performance has highlighted industry strengths and weaknesses. Certainly, specific areas can be further researched.

It is obvious that the small business atmosphere has contributed to less than sophisticated production and marketing efforts in the past. As new challenges both from within and outside the traditional industry

develop, it becomes imperative that the industry adjust its production and marketing strategies to cope better with the future.

## APPENDICES

APPENDIX A  
SUMMARY OF IMPRESSIONS FROM VISITS TO LEADING OPERATORS,  
MARKETS AND INSTITUTIONS OF THE U.S. CUT FLOWER INDUSTRY

## Introduction

This author was the recipient of a SAFE Endowment grant, specifically awarded to travel the United States to get a first hand look at the cut flower industry. Contact was made with many industry leaders, firms and other industry agencies and personnel during the spring of 1981. The only criterion used to select interviewees was that, in the opinion of the local Cooperative Extension Service personnel, the university extension specialists, or the Federal-State Market News Service personnel that were contacted, the potential interviewee (or firm) be considered a leader in the local industry, or progressive/extraordinary in his (its) approach to the industry. Persons/firms in the growing, wholesaling, retailing (including mass market) and service/supply industries and representatives of organizations affiliated with the cut flower industry were sought. (In that other products, such as potted or foliage plants, enter the same marketing channels as cut flowers and, hence, affect the cut flower industry, others were not eliminated from the list, but those affiliated with the cut flower industry were the main targets for interviews.) A list of those interviewed, including a few with whom only phone contacts were made, is found in Appendix B. In addition, names of some firms which were visited, even when no specific person was interviewed, are included in Appendix B.

Other industry leaders and firms, including Florists' Transworld Delivery Association (FTD) headquarters personnel, Society of American Florists and Ornamental Horticulturists (SAF) headquarters personnel and Mr. Edd Buckley (The Floral Index) were visited by this author on previous occasions, not specifically connected with this travel. After the travel of over 15,000 miles, findings were also discussed with Dr. Marc Cathey, presently Director of the National Arboretum, Washington, DC. Dr. Cathey had just finished serving as the first holder of the D. C. Kiplinger Chair in Floriculture at Ohio State University, during which he surveyed the floriculture industry. These names are not listed in Appendix B although some of the impressions garnered from these persons may be included below.

It should be noted that 90 to 95 percent of those interviewed did not know that the author was traveling on a SAFE grant. This information was kept confidential, when possible, so that answers to questions would not be biased in any way.

During the interviews, as a prelude to the dialogue, several questions were asked, which typically stimulated further discussion. The range of answers to these questions, as well as the usually resulting exchange, often contained remarks which were unable to be used directly in the text of the dissertation. Hence, the questions and some of the resulting major points and unusual comments are noted here. It should be emphasized that any views discussed are not necessarily those of all of the interviewees, and that some of those interviewed may, in fact, feel quite contrary to some of the ideas expressed.

Flower Travel

The first area of discussion usually revolved around flower travel. Growers, wholesalers and retailers were each asked about the origin/destination of their flowers. As one might expect, California and Florida growers typically reported that their flowers went to all parts of the country, with the Mississippi River being somewhat of a western boundary for the majority of out-of-state shipments from both states, due to the East Coast population centers. The state of Texas seemed to be the one state west of the Mississippi River (other than California itself) receiving substantial quantities of product from both California and Florida.

Some California growers had experimented with sending flowers to the Orient, and, in at least one case, a grower had periodically experimented with shipping flowers to the Aalsmeer Auction in Holland and to other European destinations. Canada was mentioned as a destination for both West and East Coast shippers, with probably the Western provinces having been served more regularly by California growers. One Florida gypsophila grower mentioned that he occasionally found a market in Frankfurt, West Germany, when Israeli production was low.

For the most part, growers from other areas, e.g., New England, the Midwest, etc., typically supplied a more localized area. This area was often in-state or even within a nearby urban area. There were a few isolated growers with large marketing systems of their own, e.g., Denver Wholesale Florists and Hill's Roses, however; these often sent product to larger sections of the country.



Retailers bought from local wholesalers, for the most part, but were, in increasing numbers, buying directly from distant grower-shippers or broker-shippers. Many retailers bought directly from growers; although this was technically the case in some of the areas served by the large terminal markets that had numerous grower-wholesaling operations represented (e.g., Boston, Portland, Los Angeles, San Francisco), other areas, especially in California and the Midwest, where growers were spread throughout the state(s), had large numbers of retailers buying directly at growing facilities.

Perhaps the most interesting response to this question of shipping origin or destination came from grower-shippers and broker-shippers. Several of these firms reported selling directly to some large retailers from growing areas or import centers, instead of to wholesalers, which had traditionally provided the bulk of the patronage of this segment. There were even a few firms which did nothing but consolidate materials purchased directly from local growers, and then ship these directly to retailers from these growing regions, thereby eliminating at least one and sometimes two middlemen. In some cases, these shipments were no longer confined to large retailers who could regularly take box lots of one species. Most of these shipments, in fact, involved mixed-species boxes. One such California shipper, who sold 100 percent of his merchandise directly to retailers, sent 80 percent of his shipments to Texas retailers and another 10 percent of his shipments to Louisiana retailers. It should be noted that some in the industry felt there was a cyclic nature to the frequency of this direct-to-retailer-shipping trend, although most thought it would be a permanent trend of the future.

Other stories abounded. There was the case of the California grower-shipper who found it necessary to buy Israeli miniature/spray carnations to fill his orders. Flowers were being flown from Israel to California, via New York City, repacked, and then, occasionally, they wound up back in New York. Perhaps, the real problem in the industry is not one of transportation but one of having supply needs coincide with supplying regions. The nature of this example might give a clue as to the ease with which South American producers entered the East Coast markets. The Atlantic Seaboard Megapolis is closer to Colombia, South America, for instance, than are the California production areas.

Many of the flowers sold in the U.S. are imported into the country. South American growers had already set up an extensive network in Miami, Florida, for handling their flowers, which now account for over 50 percent of the U.S. supply of several species. Israeli and many European grown flowers most often entered the U.S. via New York City, although Chicago and occasionally some other cities, had been used as import points on a more limited basis.

It remains to be seen where Mexico will concentrate its flower entry point as (if) its floral industry expands. Texas is a likely entry point for truck shipments, suggested most people. Some Mexican imports had already entered the U.S. via San Diego, Los Angeles and San Francisco, however.

What may yet become the most interesting detail of the future flower import game may remain in the hands of the Colombian industry. Some of the Colombian-Miami ventures were already seeking Western U.S. customers, as competition was stiffening in the East, among Colombians, themselves. (Many domestic flower industry observers predicted that

importers would continue to make inroads into the U.S. market for another two or three years, at which time competition would get so intense, as to begin affecting the health of the Colombian flower industry, itself.) Some firms had proposed shipping product directly into Houston or other cities closer to the end destination of flowers. This would facilitate an expansion of the region typically supplied, which, at least in the case of Colombia's flowers, had been the U.S.-- east of the Mississippi River. The traditional markets serviced by some importers, as well as some domestic growers, may change as competition increases.

Indeed, as transportation services improve, the flower market is truly becoming a world flower market. As one California grower-shipper observed, "We have customers who can buy off the Dutch market and get flowers just as fast as we can get them to them. . . ." Similarly, a California retailer noted that without the international supply ". . . there wouldn't be enough flowers in California because everyone would be shipping them East." Certainly there is ample justification for suggesting that domestic supply and demand are no longer completely domestically determined.

The mode of transportation of flowers was often discussed here. Although most shippers reported improved transportation and handling by carriers, some reported the opposite. All agreed that there was a long way yet to go.

Air, although used up to almost 100 percent by some shippers, had dropped in its share of the floral transportation business. The trucking industry had picked up the slack. More California and Midwestern shippers reported a 60-40 percent split than any other--with either 60

percent air and 40 percent truck or 60 percent truck and 40 percent air, depending upon the interviewee. More seemed to favor the latter split (60 percent truck, 40 percent air), but there was, interestingly enough, no obvious geographic pattern (origin or destination) for these ratios. Most thought trucking, especially with the improved precooling and other handling methods, would dominate flower transportation in the future. Furthermore, with the possible exception of Eastern Airline's "Flower Connection," most felt that the airlines had not made any concerted effort in trying to get flower handling business.

Several growers, however, did mention that the airlines had a definite time advantage over trucks, especially for longer hauls. While air was often resorted to around holiday times for this reason, some believed air shipments again would regularly dominate the shipping picture in the future. One California grower said that, ". . . my feeling is that airlines are the way to ship, and when they want to, they can get back into it. All they need is to have a competitive rate and make a pool effort and, perhaps, fly an extra plane out on holidays." Various growers' comments alluded to particular problems during the Christmas season which often resulted in flower shipments being "bumped" for mail (holiday packages, etc.) and the added baggage of flying patrons. These holiday problems, it was felt, largely were to blame for the reputation of airlines being somewhat less than dependable, although all noted there were also questions about handling techniques.

In the Midwest, several shippers reported using the train or the bus for a sizeable portion of their flower shipments. One wholesaler reported shipping as much as 35 percent of his merchandise via

Amtrak<sup>1</sup> (which one wholesaler readily volunteered was the U.S. government directly subsidizing the transportation needs of the floriculture industry (in this case), much the same as many foreign governments have been accused of doing for their country's growers). Merchandise often travelled via train to its destination overnight (i.e., relatively short distances). In the case of one firm, there was a company-owned truck, waiting with driver at the destination; he was to deliver merchandise to scattered retailers in several states over the course of the following business day. Alternating days between two different routes allowed the firm to cover two different groups of florists with one truck and one employee at least twice a week. This same firm also shipped about 30 percent of its merchandise to retailers via bus, a heavily relied on mode of transportation for getting flowers to destinations in smaller cities and towns throughout the Midwest.

The Florida grower-shippers polled relied almost exclusively on truck shipments (98 to 100 percent). Shippers on Florida's East Coast employed Armellini Express Lines, almost exclusively, for their shipments. Flowers were shipped, for the most part, via a terminal in Stuart, Florida, which often acted as a consolidating point for Florida and South American (via Miami) flowers (if the Miami imports failed to make up the full load by themselves). These flowers would then become consolidated with cut ferns from the Pierson, Florida, area at another facility in Pierson. The west coast of Florida did not seem as dominated by Armellini, although growers there still reported almost

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<sup>1</sup>To simplify or clarify information, trade names of equipment, products or firms sometimes are used. No endorsements of these or discrimination against others is intended.

exclusive use of trucking for shipments. Florida grower-shippers reported very adequate and very satisfactory shipping services and shipping channels for their merchandise. California shippers regularly employed several carriers as did other shippers nationwide.

The imported flowers from South America are largely flown into Miami, Florida. From Miami, it was reported that about 70 percent were being trucked to their end destinations, with about 60 percent traveling via Armellini Express Lines and about 10 percent via other trucking firms. Approximately 30 percent of the flowers were being flown to their endpoints, with Eastern Airlines being a dominant factor.

The other major delivery force in the industry was a group of service truckers, often working in conjunction with airlines, which was used to complete the delivery of merchandise to destinations somewhat distant from airports. These service truckers often worked at originating or ending points or both, delivering to and/or from the airports. Growers, shippers or wholesalers often relied on these service truckers to provide transportation from packing house to airport or from airports to final destinations, especially when the nearest airport with regularly scheduled flights was still some distance from the sending grower-shipper or receiving florist or wholesaler. Purelator Courier was the most prominently mentioned such firm working with the flower industry.

It should be noted that more than one grower/shipper had decided not to rely, at least entirely, on the available commercial delivery service alternatives. These few grower/shippers, which were found in all parts of the country, had purchased their own fleets for transporting part of their product. (In no case did any grower/shipper totally

rely on his own fleet.) These grower/shippers felt, in some cases, that the departure schedules of the commercial air, trucking and other companies did not totally mesh with their production and/or harvesting schedules. In other cases, it was just an issue of not relying totally on any one source for transportation services. One grower-shipper stated that it had been a lack of available haulers in the quantities needed, which had forced him to buy his fleet. A few growers also ran their own trucks on routes not serviced by commercial truck firms, thereby enlarging their service areas.

#### Time Dimensions of the Marketing System

A second discussion topic inquired about the time dimensions of the marketing system, i.e., how long flowers spent at each step of the distribution process. At the short extreme, of course, was the grower-retailer that got flowers from greenhouse to retail shop and, theoretically, possibly to the consumer's home in a matter of hours. Similarly, in the case of retailers who bought from local growers, or even in the case of retailers who bought from local wholesalers who, in turn, bought from local growers, there was the potential for a very short turnaround time.

In the more characteristic case of retailers who bought from wholesalers or grower-shippers, where flowers were shipped in, there are two stories typifying the extremes. At the one extreme was Bachman's, Inc., of the Minneapolis/St. Paul, Minnesota, area. When cut flowers were purchased for shipment (Bachman's had its own greenhouse facilities and had several local flower suppliers, especially for roses), flowers were almost never bought on Mondays because Monday's flowers, in the eyes of

the Bachman firm, were often Friday's harvest. When flowers were purchased, they were purchased with the understanding that they were "same-day-cut" (or within 24 hours of cut when shipped), and they were almost always flown to the Minneapolis/St. Paul airport. Bachman's then had the flowers within about 36 hours of cut, and counting in-store processing and distribution to one of its outlets, Bachman's had flowers available for customer purchase when they were about two days from cut. All merchandise leaving the Bachman flower processing center was date coded, and was dumped, if not sold, at the end of the third day from delivery to the retail outlet. (About 50 percent of Bachman's flowers were being used the same day as delivered to a retail outlet and they strived to use everything within two days, if possible.) Arrangements were made and were also date coded. If they were not purchased in the store within two days, they were sent out on a (blind) order or dumped. Hence, Bachman's either sold or dumped flowers within 5 to 5 1/2 days from cut.

At the other end of the spectrum was probably the more typical case, and it could easily have been a case involving any number of wholesalers in the Upper Midwest. However, it was the case of a Chicago wholesaler. Here flowers began in Colombia, South America. A day after they were cut, they arrived in Miami. When there was a strong market, flowers left Miami 24 hours later on a truck bound for the Upper Midwest. (During weaker markets, flowers often spent an extra day or two in Miami.) These trucks, however, usually made several stops in route, and about four days later, they arrived in Chicago. The arriving flowers (already a minimum of six days old) spent, according to this Chicago wholesaler, an average of two or three days in his cooler



before sale. From here, flowers moved on to a retail establishment, where they were an average of two or four days (according to several retailers interviewed). Hence, flowers were 10 to 13 days old (average) at the time of retail sale.

Perhaps, the most striking information about this latter example was that the flowers often had not even received their first drink of water until they arrived in a retail shop. This was not always the case, however, as many wholesalers conditioned flowers upon receipt, before sale. On the other hand, some flower handling theories suggest that dry flower handling, if maintained from time of cut until the time of sale to a retailer, may be a better flower handling technique than having flowers alternate between wet and dry storage. Yet, this particular Chicago wholesaler's comment was, "I maintain that the flowers I deliver to my customer, the retail florist, are in better shape by my leaving them in the box and not unpacking them, and giving them a fresh cut, and a drink of water with preservative, etc., and then repacking them, than they would be if I did all of that, solely because of the less handling they receive by leaving them in the box."

The other time dimensional facet discussed was how these time dimensions may change around holidays. Here is where some different patterns surfaced, as some growers, shippers, wholesalers (and other middlemen) and retailers all admitted to having deviated from their regular practices for holiday periods. Rose growers, especially, admitted to rotating parts of their harvest for days prior to holidays. Valentine's Day and Mother's Day were most notable. Although a three to five day back-up was common, several growers reported a back-up of longer periods. Furthermore, this back-up procedure, although it

involved rotating product in and out of storage, often started as much as two weeks prior to a holiday. Hence, several days (or weeks) prior to a holiday, 20 percent (the most often mentioned amount) of the day's cut, for example, was held back and stored for, perhaps, three to five days. The flowers were then rotated out of storage, being replaced by flowers from subsequent days' harvests, but maintaining a 20 percent reduction in daily "output." This continued until holiday prices peaked; then flowers were put on the market. By the time the cooler was cleaned out, a grower may have had an entire extra day's volume of merchandise (or more) available; however, the merchandise shipped may have been anywhere from one to five days old, depending on the rotation method used. (Some growers held back smaller amounts further in front of the holiday and increased this to, say, 40 to 50 percent held back as the holiday approached. In this manner, all merchandise may have been only two or three days from cut at time of shipment.) Furthermore, some growers admitted to relaxing their quality standards during holiday periods, especially for Valentine's Day.

Middlemen and retailers both admitted trying to "play the market" at holiday times as well. Wholesalers often stored boxes of flowers, especially pompon chrysanthemums for two to three weeks prior to a holiday, trying to "beat" the price increases. Carnations also often experienced such storage for long periods. While other flowers do not lend themselves to such lengthy storage, most admitted to as much as a doubling or tripling of their typically two-to-four-day turnover period, for some of the other species.

Even retailers admitted to holding flowers an extra day or two during holiday periods. Some of this storage resulted from the need

felt by retailers for starting to make holiday arrangements several days earlier than usual, just to meet the (anticipated) demand. Retailers reported difficulty in finding additional trained labor for just the few holiday periods during the year. Hence, the retailer's method of meeting the peak demand was often to spread the design work over extra days, even if all of the holiday's deliveries had to be made on the day of the holiday itself. (Holiday drivers were easier to recruit than designers. Often the renting of vehicles and the assigning of office staff or the hiring of temporary personnel, etc., to be drivers was done. One firm even "hired" a fleet of metered taxicabs, with their drivers, for holiday delivery needs.) Other retailers admitted to just leaving the telephone off the hook at holiday times.

The most obvious lesson to be learned, noted several people, was that at the (holiday) time when flower demand was highest, when many people who (seldom) buy flowers were doing their total flower purchasing for the year, the quality of the merchandise was the lowest. If ever an industry was trying to impress people with the fact that its product was a good value, it certainly would not want a reduced product post-purchase longevity (that occurs at peak demand times) to be its advertising mechanism, observed several. Yet, this is exactly what happens in the flower industry. "It is no wonder that the widely held belief among the public is that flowers don't last. When the majorities see flowers, they don't last!" noted one.

One cannot help but wonder how much of the peak-and-valley price fluctuation occurring at holiday times results from actual changes in demand, and how much of it is caused by the reduction in supply that occurs prior to the holiday, due to those in the distribution channels

restricting their marketings through the system. Both increased demand and reduced supplies (at each and every price) will raise the price of a product.

### Lengthening Flower Life

When one asks those in the industry their feelings about preservatives, one should expect a varied response. However, the wide multitude of answers given to this question, was indeed surprising. The discussions that sometimes followed (some people just said, "I don't believe in them" and that was the end of the discussion), were even more enlightening.

The first thing, which one may take for granted (but after several people noted, this author decided he should not), is that the product one starts with, must be of good quality. No preservative in the world can improve a bad product. (It was also pointed out that, "Refrigerators are not flower hospitals.")

Assuming the product was decent, use of flower life-lengthening methods varied tremendously. Some people used no more than water. Some people did not even use water, insisting that the product did better left dry, or even left in a box when subjected to less handling. Some people, who have adopted SAF's Chain of Life Program, were using deionized water.

Perhaps the most common answer given when asked about preservative use was, "We put Clorox in the water." It was amazing how many people used this and nothing more. While few, if any, rose or carnation growers used Clorox, the multitudes of others that did, suggests that

Clorox may be the number one floral water additive used by growers today. Its preserving nature may be questionable.

Rose growers seemed to be the most sophisticated users of life-extending methods. Growers largely had procedures down to a science from the moment the flower was cut. Most of these growers placed flowers in water in the greenhouse; roses, then, were usually conditioned with a floral preservative before they were packed. While some growers mixed their own preservatives (using something such as 8-hydroxyquinilane citrate (HQC) and sugar), most were probably using one of the name brand preservatives, e.g., Floralife, Floreverb, etc., or a similar product made up at a local cooperative. Some rose growers carried this a step further by adding citric acid to the above mixture to adjust the pH of the water.

In the Minneapolis/St. Paul area and in the New England states, there was even another step employed by many rose growers. Methodology attributed by one grower to Dominic Durkin of Rutgers University, found many Minnesota rose growers adding a few drops of Johnson's Baby Shampoo (per gallon of water) to the initial water roses were exposed to in the greenhouse. Only one or two growers in Minnesota, along with most of the New England growers, actually purchased the polyoxyethylene sorbitan monolaurate (or Tween 20) ingredient in the shampoo that was supposed to reduce the water's surface tension (this improves sudsing in the hair or water uptake in the rose). Instead, several growers had shelves full of shampoo lining their offices. Use of deionized water was probably most common among rose growers. In addition, roses were often packed in ice for shipping.

Carnation growers were probably most in a state of flux in their preservative use. Riverdale Farms' SuperCarnations were obviously on many people's minds, as was silver thiosulfate. A lot of growers were skeptical about the SuperCarnation and its secret formula of "silver thiosulfate plus some mystical ingredient"; many growers were vocally and visibly upset at this topic of discussion, feeling that anything that was supposedly that good should have been shared with the industry.

Use of silver thiosulfate was not uniform. Some growers used silver nitrate. Some growers expressly avoided all silver-containing products, saying that silver had never been cleared for use, and, as it was a highly poisonous material, they were not going to use it until it had been certified for such use. Many growers used a commercially prepared preservative, while some growers used nothing but water. Then there were growers that used nothing and shipped their flowers dry, without ever giving their flowers their first drink. This seemed almost uniform among South American growers, who not only shipped totally dry but who also shipped in a tight bud stage, the latter being something far different from the practices of almost all domestic producers.

The other noticeable group using preservatives was growers of baby's breath and miniature/spray carnations. These growers not only used preservatives (usually a commercially prepared brand) but very often shipped their flowers in water. Some baby's breath growers claimed that their product smelled too vile upon receipt (after shipping), if they failed to use such a preservative in the water. Unless properly dried with glycerine before shipping (and then sold as a dry rather than a fresh product), it had to be shipped in water to be in a saleable state (i.e., as a fresh product). Miniature/spray

carnation growers claimed a noticeable improvement in their flowers, if they were kept in water.

There was one other group of flowers that typically was exposed to preservatives by the grower. These flowers were those raised by some growers, who were raising some of the other flower species previously mentioned. Growers often said that they used preservatives on their roses and carnations, for instance, and that it was too much trouble to change procedures for their minor flower species. This omitted change would have either involved retraining labor or, in some cases, where preservatives were automatically added to the water system, changing the water hookup. More growers claimed that it would be too much trouble to make these changes and, therefore, used preservatives on everything, than growers who claimed they used preservatives on all crops as a matter of good floricultural practice.

Of course, at the other extreme were the few growers, who not only used preservatives on all of their flowers, but who employed several different preservatives, depending on the species. Several growers pointed out that what helped one species may actually hurt another. More than one grower had hired a full- or part-time technician (in some cases a university consultant) to work on the specifics of preservative use for various species.

Chrysanthemum growers, of both pompon and standard forms, often operated quite differently. In many of the chrysanthemum operations that were visited, one was immediately reminded of the beginning premise, i.e., the beginning product must be of good quality. While leaf miners were a big problem for many, many very clean operations were seen. (What was distressing, however, was a visit to one operation

where a visiting chemical company salesman was telling the grower that he thought his chemical was doing a good job and that this grower's crop was one of the cleanest he had seen. This indeed was a salesman, for this was one of the worst crops this author had seen.) Besides leaf miner, however, chrysanthemums had other maladies. Standard chrysanthemums often looked shattered or malformed. Pompons were often literally forced into sleeves, sure to experience further damage during packing or shipment. This became especially evident when seeing daisy pompon chrysanthemums being unpacked in wholesale and retail outlets.

Next came the question about post-harvest care by chrysanthemum growers. When asked about preservative use, more chrysanthemum growers responded that they used Clorox in the water than any other group of growers. Several said that Clorox was used to retard bacterial growth that occurred from having chrysanthemums sit in the water. Of course, it should be pointed out that these chrysanthemums, in all but a few cases, sat out on the packing shed floor and were not refrigerated. Furthermore, most growers felt it too time consuming to change the water regularly and kept the same water-filled buckets lined up on the floor (with the same water and Clorox) to receive the day's cut, day after day, for as much as a week or two before changing the water. On more than one occasion, when growers were asked about their post-harvest care, the reply was heard, "Have you ever heard of a flower lasting too long?"

Beyond the grower level, one has to admit that the controversy over SuperCarnations and the advertisements for the "Chain of Life Program" were certainly raising the consciousness of the industry for



flower-life-extending methods. Middlemen were doing many different things, from treating flowers to shipping free packages of preservatives with every box of flowers (for use by subsequent members in the marketing channel). Many middlemen actively pushed preservative use by sending fliers in flower boxes or in bills, or by soliciting sales of preservatives over the telephone. Many middlemen used preservatives in their water, although the pattern seemed to follow that of growers, i.e., roses and carnations got the best care, with many other flowers receiving little or no care. Middlemen selling whole box lots, almost invariably never opened the boxes from the time of receipt to the time of delivery, especially for standard and pompon chrysanthemums and minor flower species.

Use of other post-harvest handling methods seemed to be changing. There was a trend among grower-shippers, brokers and other middlemen to use pre-cooling, when available. Many boxes came with removable "portholes" for cool air-sucking or pushing devices. In some areas, truckers were providing the service; in other areas, truckers were requiring the service for all boxes on consolidated loads (from several sources), and they were charging for it, too. One wholesaler had mandated that all of his shipments be pre-cooled at the customer's expense. He reported that claims had dropped, but that he had also lost about 20 customers because of this decree. Some middlemen were making conscious efforts in their coolers to achieve better air circulation by spacing boxes in their stacks. Deionized water use was increasing. Some firms had bucket scrubbing machines to "disinfect" every bucket between every use. Preservatives were often added automatically to all water in much the same way as fertilizer is injected into the water source of

many greenhouses. The term "Chain of Life Program" was recognized by many. Yet in many areas, nothing was happening to improve the way flowers were being handled.

At retail, there was still probably the most room for improvement. Many retailers failed to use floral preservatives of any kind. Furthermore, it was still not uncommon to see the high ethylene-producing fruits, foliage and older decaying flowers kept in the same coolers with the freshest flowers.

Yet, there was a group of florists that made conscious efforts to improve their flower handling techniques. Some retailers not only used a preservative in their buckets of flowers, but also used preservatives in their floral foam-soaking buckets and, occasionally, right in the container of an arrangement. Care tags, even on cut flower arrangements, often with consumer packets of floral preservative attached, were becoming more and more common. However, most of those with whom the industry was discussed still believed this group of florists to be a small minority; from this author's observations, they were probably correct.

Retail florists also were regularly accused of using flowers "over the hill," especially in funeral work. Growers and wholesalers regularly derided retail florists for giving the industry a bad name in this respect. Several retailers responded that use of "more fully developed flowers" was justified in funeral and wedding arrangements to "provide the best show for the money." Obviously the jury is still out, but the horror stories of flowers losing their petals during services abounded.

Discussions of post-harvest care of flowers, surprising as it may sound, often raised unsolicited discussions of cost. Some persons talked of how little the use of preservatives costs; others, mostly those not using preservatives, talked of the expense involved. Members of the latter group often said something like, "I've not found their use justifying their cost."

The flower handling techniques at the large terminal markets should also be noted, for here, handling had its own uniqueness, a uniqueness which sometimes varied with the market. In most cities, wholesalers were separate businesses, each located behind separate doors, with each operating in their own separate way. Often, the wholesalers were found within walking distance of one another and when that occurred *en masse*, as in New York City, some generalizations can be made about the markets, as long as one realizes that they are generalizations, and, hence, exceptions exist. In the cities of Boston, San Francisco and Los Angeles, even the doors were absent (and to a certain extent, that the operations of many firms in New York City spilled out onto the sidewalk, one might consider the doors absent there, too), and everyone could easily detect what the competition was doing and react accordingly. (Portland, Oregon, also has a similar terminal market setting; however, Portland was not visited as cut flower sales in the market itself no longer occur.)

New York City, which was called "the Den of Forty Thieves" by more than one interviewee, was an experience. Even one New York City wholesaler remarked that, "I think you'll find every market better than New York--they're better organized; we're still cutthroat here." Many growers and shippers confided that New York City was their market of last resort and a dumping ground, although a few did claim to get better

returns from their New York commission wholesalers than they did from other FOB sales.

In New York, flowers was often displayed right in the boxes, with lids removed from the display box on the top of the stack. In some wholesale houses, one had to specifically ask to see the condition of the flowers that one was buying before a box in that stack was opened. For those wholesalers who sold quantities smaller than box lots, flowers were usually displayed either lying on tables or in vases. After asking several wholesalers why some of their flowers were on tables while others of the same species were in vases of water, this author was told, "Those on the table are today's flowers; those vased up are yesterday's, because if there are any left over at day's end, they are vased up and put in the cooler." One wholesaler, however, confided that, ". . . if the market is good, we take them out of the bucket for the second day's sales, and lay them back on the table."

In Boston, there was also the mixture of flowers in and out of water; yet, there it seemed to be the preference of the grower, rather than the age of the flower that determined how the flowers were displayed.

Los Angeles and San Francisco, being, perhaps, more grower-oriented markets, seemed to be more consistent in their flower handling, with flowers displayed in buckets, for the most part. Yet, in California, perhaps because one finds a much greater diversity in flowers, one does not always find flowers vased. In California it seemed as if flowers were almost marketed, with growers laying flowers on tables if they were straw-like (e.g., straw flowers, statice, some of the wild flowers, etc.), and vasing them up when proper handling was a recognized concern

for that particular species (e.g., roses, carnations, chrysanthemums, snapdragons, etc.).

The San Francisco market had a unique flavor all its own. This market tended to be a meeting place for many firms to pick up, rather than buy, their flowers, as, perhaps the majority of flowers being merchandised were sold or "pre-sold" on a standing order basis. Thus, many merchants often arrived at the market and immediately began making up "consumer packs" of flowers for their various customers. Hence, when "walking the market," much of the merchandise appeared to be out of water, because it was already wrapped (usually in newspaper) with the name of the buying florist already "adorning" the package.

In all such markets, any use of preservatives in the marketplace itself was limited.

#### Grades and Standards

Asking about grades and standards had its "ups and downs." Asking some people solicited laughs; asking others, solicited sympathy. There was no standard response.

Many people began their discussion of grades and standards by suggesting that it was a dead subject. The author heard the stories of how "there are grades and standards in the industry--everyone has their own grade and everyone has their own standard." Most believed that the entire subject had been made into a mockery. One Midwesterner observed, "I don't think there is any industry interest in grades and standards. The industry prefers confusion and disorderliness."

There were exceptions. Many rose growers insisted that they had a strict grade that operated on either a 2-, 3- or 4-inch increment in

stem length and that used variance of the stem from the perpendicular (i.e., stem strength), straightness of the stem, and, perhaps, bud size to classify the roses into particular grades. Many claimed they were using the Roses, Inc., suggested grades, or a variant thereof. Some suggested that a further grading technique should include how open the blossoms were; some grower-shippers and wholesalers reported selling in up to five different stages of openness.

Carnation growers, of all the producers visited, were probably the group most vehement about grades, maintaining that carnations had strict grades (Society of American Florists recommended grades for carnations) which were fairly well followed. Again, stem length, size of bud and variance from the perpendicular were the criteria used. While carnation growers may have been vehement in their enthusiasm about their grade, middlemen questioned the uniformity among growers, claiming carnations were graded just as loosely as other flowers--depending on the particular grower(s) involved.

While there may have been some questions among the ranks, it was immediately obvious in the marketplace that there have been some efforts made to grade roses and carnations. Both appeared in regular 25 count bunches, and wrappers usually denoted stem length and/or a name such as "Fancy," "Standard," "Extra Fancy" or "Utility," etc. The method of wrapping the flowers was not standardized, however, as some growers made flower heads level, while others used two or three different levels for positioning heads in the wrapped bunch. Whether or not there was any consistency to the grade within any particular wrap, is subject to argument.

For the most part, any other flower grading was usually on a grower by grower basis, if it existed at all. There was some effort made by several standard chrysanthemum growers to size the flower heads, and gladiolus and snapdragon growers, for the most part, each tried to differentiate their flowers by some combination of stem length and flower spike length. There were even one or two growers making efforts to grade potted chrysanthemums by stage of openness, as well as the pot size. For the most part, however, there did not appear to be any efforts to grade other flowers. Field run cuts "made the bunch" for most of the minor species.

On the other hand, many regions, growers and/or species seemed to have a standard stem or blossom count or various other methods to standardize bunches by weights or size. Roses and carnations were generally bunched in bundles of 25 stems; miniature/spray carnations were regularly bundled with 33-35 buds showing color. Snapdragons and gladioli were usually bundled in groups of 10. Furthermore, 8-, 14- and 16-ounce bunches of statice were sometimes used regionally, sometimes varying with the growers. Gypsophila was often bunched by the pound. Many statice and gypsophila growers bunched "by the handful." At one time 12-, 14- and 20-ounce weights were commonly used for bunching pompon chrysanthemums, although most growers seemed to have gotten away from weighing these flowers and instead bunched "by feel" or by number of stems (the latter depending on whether the flowers were from the first, second or third cuts of a bench or bed).

Yet, throughout the industry, skepticism abounded. One shipper reported that, ". . . 80 percent of each of my growers' carnations are graded 'Fancy'--no matter what they look like--80 percent is 'Fancy.'"

Another shipper had discerned a pattern among his carnation growers dependent on who did the grading. "For the operations where the wives do the grading, there is a constant pattern of over grading [product was not stringently graded]--almost in an attempt to 'protect' the family income. For the operations where grading is done by paid employees, the flowers tend to be a lot more consistently and realistically graded."

Most of the carnation growers, with whom this author spoke, claimed that 60 to 80 percent of their merchandise made their top grade. This depended on the grower, and, of course, this actually depended on the crop. One grower observed that, "The trouble with the grading procedure is that growers feel forced to inflate their crop's quality in order to get what they need to make it [financially], rather than admit they only raised a second grade crop but need the top grade returns. Growers," he continued, "just don't have enough market power, as individuals, to be able to make those kinds of demands."

Denver Wholesale Florists probably reported one of the strictest grading practices. Although they reported that one grower consistently had 85 to 90 percent of his carnation crop grade "Fancy," the house average typically ran 56 to 58 percent "Fancy." Growers were allowed to do their own grading or to pay another (in-house) firm 1.3 to 1.5 cents per flower to grade for them. In either event, graded flowers were again checked to see whether they met house standards. Flowers were regularly down graded during this second inspection, as necessary. It should be noted that Denver Wholesale Florists' carnations regularly received a premium of two to four cents on the markets surveyed, when the market was strong.



Some would maintain that this Denver Wholesale premium is as much because Denver's carnations generally had no plastic collar, tape or rubberbands around the calyx. Almost all other domestic growers were forced to use some such protection because of splitting heads. Due to climatic factors, however, this need was eliminated in the Denver area. South American carnations often had no protection either. However, South American carnations were being shipped in a bud stage, and, as many persons noted, one can only question as to how well any grading (that is supposed to include the size of flower head) could be done when flowers were still in a tight bud stage.

Another extreme in the grading spectrum was also reported in Denver, this by Veldkamp's Flowers. Veldkamp's, a grower-retailer, sold all of its cut flowers through its own retail outlets. The attitude at Veldkamp's was that flower grades were not important at the time of cut but were important, if at all, at retail. So, in the greenhouse, flowers were cut and bunched in bundles of 50 "generic" flowers. Any grading desired could be done by the designer who usually adjusted stem lengths and then positioned flowers in the arrangement based on size and openness anyway. Veldkamp's maintained it was more important to move flowers through the system as fast as possible; their attitude was that "quality is freshness . . . grades and standards is more [an issue of] freshness and quality control."

Another observation came from playing devil's advocate with growers and middlemen. This author inquired as to how operators were able to sell/buy by grade over the telephone if the grades and standards were so poorly adhered to. Growers first answered with the word "quality." Occasionally, if some rapport had been established, this was challenged

further with the line, "that's what everyone says--quality. If everyone is shipping quality, where does all the junk on the market come from?" Responses indicated that growers picked their standards, whatever they were, and tried to stick with them. Customers eventually got used to them and bought accordingly.

A lot of growers indicated, however, that they often gave credit for merchandise which had been sent and that this often was a big problem. New York City wholesalers, which were spoken of in many unsavory, but, this author was assured, deserving terms, were often accused of demanding credit, especially when there was a glut on the market. Several growers had tried to combat this practice by offering to pay shipping to have merchandise returned so that it could be inspected. Wholesalers then frequently claimed that they would look at it again and would try and sell it anyway, this author was told.

Many wholesaler responses to this devil's advocacy indicated that a lot of buying came from experience and from shopping around. After a while, middlemen reported that they learned "who sends quality and who sends junk," and then they stayed with the quality growers. Hence, growers and middlemen indicated that they were, in fact, operating with some kind of informal grades--which, although not always written, allowed growers and middlemen to operate based on some historical consistency or pattern of quality over time.

Whether speaking of flowers sent through the Veldkamp system, of flowers processed through the Denver Wholesale system or of flowers from any other grower, the surprising fact was that when this author conversed with most retailers, he found that they were usually fairly pleased with the grades and standards of the flowers they were able

to buy. This became even more astounding considering all of the complaints of middlemen, as well as the cognizant honesty of growers, who admitted that there were problems with the grades and standards in the industry. Although some leaders within the retail segment were informed about the grading controversy, the vast majority of the retailers interviewed simply replied that they were happy with the flowers they received; some even seemed quite puzzled that one would ask about flower quality.

This can only lead one to believe that either middlemen were doing a tremendous job of weeding the poor merchandise out of the system or that retailers often did not know, or did not care, about the merchandise's supposed quality, at least as it was denoted by grade. Observance of wholesalers' and retailers' actions in the marketplace, coupled with wholesaler reports that retailers often requested the lower grades of merchandise when they were shopping for price, for instance, may lead one to favor the latter conclusion. Some retailers may not have cared about the supposed quality because they did not have faith in the grading system; unfortunately, all too often, it appeared that retailers did not even know about flower quality (leaving the question of whether or not grades exemplify flower quality for another paragraph).

One could not help but observe the retail segment of the industry, when speaking of grades and standards, and note that, whether or not there was any cognizance of quality when flowers entered the shop, there was usually no differentiation of quality when flowers left the shop. While potted plants were often bought and sold based on plant and/or pot size, roses were, perhaps, the only cut flower that was sold at retail

with some differentiation, as they were sometimes sold by stem length. Many florists had separate prices for "roses" and for (extra) "long-stemmed roses." Some florists even differentiated shorter roses, selling these at a lower price. Furthermore, sweetheart/miniature roses were almost always differentiated from hybrid tea or floribunda roses.

Carnations, on the other hand, were seldom differentiated at retail except by miniature/spray versus standard varieties. Some florists were beginning to differentiate "shorts," however. Yet, carnations with the shortest stems, when made into boutonnieres, often brought a premium at retail (i.e., as a boutonniere). Still, carnation grades of any kind, at retail, were, for the most part, nonexistent.

Retail sales grades for all other cut flowers were unheard of; when arranged (as opposed to wrapped or boxed), any differentiation of rose and carnation grades almost ceased to exist as well. Perhaps this, then, leads to the real reason grades and standards were a questionable topic of discussion. As one industry observer noted, grades and standards have "always been based on size, and they have nothing to do with it . . . . What people need is some expectation of useful flower life." He continued, "Current grades and standards are . . . not dealing with what the retailer perceives or what the consumer desires."

The question of product dating itself, often surfaced during the discussion of grades and standards. Several persons insisted that the most important aspect of flower quality had nothing to do with bud size, length of the stem or weight of a bunch. Instead, what was suggested was some indication of how long the merchandise could be expected to last in "satisfactory" condition. Some retailers guaranteed, either informally, should a customer complain, or formally

with a written message accompanying each arrangement, that flowers would last, for example, for at least 48 hours after receipt.

Wholesalers and retailers each had a certain unwritten criterion which they used for quality, that products had to meet before they sought credit from the prior market channel participants. This quality criterion almost certainly included some time period after receipt of the merchandise, i.e., flower quality generally included some remaining useable life. Furthermore, almost every grower who stored merchandise and almost every middleman and retailer did some kind of product dating for rotation purposes, whether it involved actual dates stamped on boxes or bunches, color-coded stakes in the flower vases, putting the freshest box on the bottom of the stack or putting the freshest flowers in the front of the cooler and the older flowers in the back of the cooler. Yet, with only minor exception (the Wright Brothers' Utah Roses, Inc., was one) did any product dating occur, where dates travelled through the marketing channel with the flowers. One retailer, perhaps, summed it up best when he said, "I think you can use three day old merchandise and five day old merchandise and 10 day old merchandise, but you should know what you're getting."

The big argument against product dating, of course, was that the date by itself said nothing of the shape of the flowers. A freshly cut flower may not last as long as a four-day-from-cut flower, for example, that gets better handling and care. However, with the exception of rose growers, who were as a group (another generalization) the most vocally opposed to product dating of those interviewed, many industry participants claimed they would be in favor of product dating. Cynicism immediately surfaced, however, as many people questioned the honesty

with which such a program would be carried out by their peers in the industry.

### Changes in the Industry

The next area of discussion during the interviews often evolved to one concerning present or future (anticipated) changes in the industry. Perhaps the truest comment on change that was received was one made by a South American importer who said, "The one certain thing about the flower market in the U.S. is that the rate of change is going to accelerate." Changing production technologies and changes in product, i.e., species being produced (or anticipated to be produced in the future) and location of the production, whether local, domestic or foreign, were discussed. In addition, changes in time(s) of use, place(s) of purchase and changes in the market structure of the industry were addressed.

### Production

Changing production technologies, as a topic of discussion, often occupied relatively little time during the interview. Yet, when touring the facilities, altered production technologies were often evident. Growers emphasized the fact that the production techniques had evolved from those of previous years and that those of the future were expected to change even more. This having been said, this author still was amazed to find the pockets of the country where production methods had not changed. When planning the travel, for instance, one Midwestern extension specialist said, "There's nothing [progressive] to see around here. We've got growers who are traditionalists. There are some

growers using the same methods and even the same soil in their greenhouses today that they trucked in back in the 1940s."

Yet, production facilities, in much of the country, have evolved into a much more sophisticated "factory" than in any previous time in horticultural history. In very much an assembly line fashion, pots or flats can be filled by machines; in some cases field crops are planted, although still by hand, with workers "riding the rows" on machines. In greenhouses, potted plants or flats are often conveyed on a belt for the planting process and, in some cases, are whisked away by mechanized carts or belts to the greenhouse. Even the final packing is often very much akin to an assembly line, as boxes meet packers and flowers in a neat arrangement of tracks, belts and strapping machines.

Crops are no longer just grown, either, but are today produced for a certain time period. While some of the holiday pot crops have always depended on such precision, even cut flower crops today have to "hit a date" more than at any time in previous history--this because of the price vagaries of the marketplace. A careful sequence of pinches move the production towards its goal, and careful management of temperatures, lights, watering, fertilizer and, in some cases, growth regulators, with some cooperation from Mother Nature, bring plants into bloom in time for the market peaks.

Energy considerations were, perhaps, the most noticeable change present in the greenhouse factory. Growers were proud to show off their double-layer polyethylene, their double-layer fiberglass and, in one case, their double-layer acrylic structures. Heat blankets, whether manufactured or homemade, were pointed out not only in many structures of the North but also in more than one Southern California location.

Heating fuels were in a state of flux in much of the country. Infrared heating was evident, and much talk on geothermal heating was heard. In the New England states, both woodchips and sawdust were used for heating, as well as the more typical oil and gas. There was even one grower that decided that he just could not afford to heat his entire rose range. He completely relied on the natural heating of the sun to bring part of his rose range into production as spring approached, leaving the plants dormant during the dead of winter. This may definitely lead to a trend of the future.

Other energy related production decisions were being made. Many growers had switched crops, some moving from warmer crops, such as roses, to cooler crops. Others had used the reverse strategy, moving to higher cash value crops to justify their heating expenditures, as from carnations to roses, bedding plants, or potted blooming or foliage plants. Some growers had changed their cropping patterns for the same reasons. One New England pompon chrysanthemum grower hustled between crops and got five cropping sequences per year, instead of the more usual three and a half to four; this grower started his long-day lighting procedures while cuttings were still rooting in the bench. In Colorado, several carnation growers had deviated from the normal two-year cropping sequence and had decided that carnations only warranted one or two cuttings before being pulled from the benches and getting replaced by bedding plants for spring sales. Finally, energy considerations, in some cases, had been responsible for some growers having relocated their operations altogether, from one part of the country to another (e.g., from the North to the Sunbelt or from Northern



California to Southern California), or from the United States to Mexico or Central or South America.

Another major consideration among producers was labor. Increasing wages and, in some areas, availability of trained, or even common laborers, have caused some changes among producers. Many growers blamed labor availability problems for decisions to switch from producing standard (disbud) chrysanthemums to pompon forms. Yet-to-be disbudded, but already blooming standard carnation varieties were in evidence and may be an indication of a similar trend to come for carnation producers in some areas. Indeed, many carnation growers had already made a switch from standard to miniature/spray varieties in all or part of their production areas.

Many growers indicated labor problems had caused them to switch crops altogether. This sentiment was heard from some former chrysanthemum growers who asserted that difficulty in hiring the vast numbers of people needed to pull black cloth (to achieve the needed photoperiodic effects) had caused them to switch from raising chrysanthemums. Some gladiolus growers said labor hiring troubles, perhaps caused by competition from other agricultural jobs, had caused them to reduce acreage greatly. (Labor here is needed for hand setting corms in the field, harvesting and for cleaning and storing corms.) Some former gladiolus growers blamed labor problems for their leaving gladiolus production altogether to switch to such crops as statice and baby's breath, which have much more limited labor requirements. Cheaper and/or more plentiful labor were cited as reasons some producers had moved south of the border. (The once noticeable wage differentials, however, were reported to be narrowing.)

Furthermore, reduced or altered labor requirements may have been responsible for some growers adopting certain practices faster than might otherwise have been the case. Chapin tube systems, automated watering booms, ground sprinklers and other automatic systems have greatly reduced labor requirements for water application. There are now also automatic black cloth systems, which can even be put on timers and/or computerized systems to eliminate much of the needed labor, e.g., Simtrac. While many of these systems are costly, the quickly rising labor expenses, and/or difficulty in finding labor, had quickened growers' investing pace for such labor-saving devices.

Labor saving devices, while applicable at some levels, have failed to permeate the industry at all levels of the market channel. Growers complained that labor saving devices for planting, disbudding, harvesting or boxing of flowers were far off. Some grading equipment has been developed for sizing roses by stem length and for automatically counting the number of flowers to be bunched (used mostly with carnations), however. Retailers, too, noted that about the only labor saving devices ever invented to help the retailer have been the rose cleaning machines that stripped foliage and some thorns from a bunch of roses, the more modern cash register systems that helped with some inventorying jobs, the newer computer terminals that assisted with wire service orders and flower coolers that eliminated the need for hauling blocks of ice all day. Retailers noted that "you'll never be able to automate floral designing."

Other production related changes which were still on the forefront were unfortunately not universally adaptable either. Some firms, for instance, had developed different bench structures which allowed for

moving benches. In some cases, benches moved so that all aisles could be eliminated in a greenhouse bay, except for one, and where that one was positioned became variable with the need. In another example, entire sections of benches were wheeled (on rails) outside during the warmer daylight hours, exposing an entire "ground floor" of bench space below; benches were then moved back inside at night for protection. This then allowed the grower to essentially double his space with a multi-story effect. Unfortunately, such methodologies had been adapted only to potted crops or bedding plants and not to cut flower crop production; the weight of soil laden benches that would be required for production almost precluded their adaptation for cut flower cultivation. Pesticides, which were often labeled as being crop specific and, hence, not widely adaptable, provided another example of how certain production techniques were not uniformly suited to all facets of floriculture.

Another area of change often discussed, pertained to a change in species raised, but spurred by marketing, rather than production decisions. Many firms had added some of the more minor crops (anything other than roses, carnations and standard or pompon chrysanthemums is considered a minor floral crop by most) to their production or marketing mix in an effort to increase their market share. Availability of minor crops offered some firms a competitive advantage. In other cases, some firms were phasing out their production of major species completely and raised only minor crops in an effort to maintain a niche in the market.

Examples of these product mix changes were seen at production, wholesale and retail firms. *Alstroemeria*, gerbera daisies, lilies, miniature/spray carnations, snapdragons and cut bulb crops were just a few of the crops that growers were raising in an attempt to round out

their product lines or maintain a market niche. Several wholesalers specialized in carrying these and other minor crops, as well as the "bread and butter crops." Furthermore, wholesalers found it very advantageous to carry the unique in attracting clientele. Birds of paradise, anthuriums, proteas and forget-me-nots were all "featured" by at least one wholesaler. This activity continued at the retail level, as some of the retailers visited had "specialized" in dried and/or silk flowers, "exotic" arrangements using proteas, anthuriums and birds of paradise and, in one case, being the only retailer in the area that carried bulb crops (tulips, narcissus, etc.) seven or eight months of the year, or that rented large baskets of white petunias and other annuals for weddings or parties.

Another phenomenon which had affected the cropping techniques of growers and which will certainly affect them more in the future was the surge in mass marketing of floricultural crops. Growers had, in some cases, already altered pot sizes for growing blooming plants for the mass market. Cost of production, as it related to a low eventual retail price, was the factor most cited. The four-inch potted chrysanthemum had been successful in some markets, as had the four-inch poinsettia and some smaller pots of bulb crops such as tulips and hyacinths. In some cases, this had meant a change in varieties grown and in some of the growing practices (e.g., use of growth retardants, fertilizer and watering practices), as well as the pot size.

There was also a popular opinion among many in the industry that even more growing techniques would change due to mass marketers, especially if the mass marketers' share of the cut flower industry continued to climb. Many believed that other horticultural practices

would change; this might include, for instance, items relating to stem length such as fertilization, watering, lighting and/or soil mix issues. Many believed that shorter stemmed flowers, which did not take as long to grow, would be forthcoming as a means of keeping costs down. This would allow retail prices to remain relatively low at the mass market.

Furthermore, if mass marketers continued their trend of expansion into floricultural products, many believed that growers would either have to increase in size or in number, just to supply the quantities of flowers needed. A common belief was that there were not enough flowers, or at least enough quality flowers, then available. The price fluctuations of the marketplace were cited as proof. Similarly, an appetite might further develop for the unique, and a much wider range of materials might have to be added to the cut flower lines available--this for both the mass marketers and traditional retailers trying to capture and retain their customers' eyes. Imports might also supply any increased demand requirements.

Another cropping technique mentioned that might yet unfold was that of raising prefinished potted blooming plants in the South and then shipping them north for finishing in local greenhouses near urban centers. While some considered this just an adaptation of a process that many Northern foliage producers had used for years in conjunction with Florida firms, if widely adopted for production of potted blooming plants, it would signal a significant change in the floriculture industry. Most potted blooming plants were produced from start to finish in localized areas near cities. Frank Cobb (Sandyland Nursery, Carpinteria, California) provided an example of the exception; he had developed an extensive business built almost exclusively on raising

potted blooming chrysanthemums in California and New Mexico for year-round shipment to mass marketers nationwide. The idea of prefinishing plants in the South for shipment north, was discussed by several growers in Midwestern and Southern states. It was the Southern growers, however, that noted that selling prefinished plants still would involve the major costs of plant cutting, pot, soil, etc., which were fixed. "The rent," said one grower, "just isn't that much for an additional few weeks. I don't think it'll ever get off the ground because the price differential between selling a prefinished plant and a finished plant won't be great enough to be that attractive."

The idea of moving major crop production to brighter areas with lower fuel requirements and then shipping them to consumption centers was not new, however, as cut flower growers had seen. Centralized production in the warmer climates of Florida and California had put many Northern growers at a definite competitive disadvantage. Florida growers were finding themselves in much the same kind of struggle for survival due to South American and, perhaps, Mexican growers and their exports to the U.S. There was every sign that this trend would continue. Although most of the growers interviewed felt that California might remain a source of domestically raised product, there was skepticism that local production would remain viable in many other parts of the country. Some growers used the line that, "There is always a market for quality product." Yet, several Colorado growers pointed out that many local growers, only three years previously, had said that they had expected to be in business for another 10 to 20 years minimum; this included many growers who had already gone out of business.

As foreign and domestic handling procedures continued to improve, many questioned how long the few Northern growers who remained would be able to survive. On the other hand, some argued, the fact that these Northern growers were still around might be enough reason to speculate that they would have a future role in supplying local markets. This niche was one that they had been able to fill; obviously they were filling it better than Sunbelt or foreign producers were up to that time. Perhaps a changing picture; perhaps not.

Naturally many people blamed the imports for the problems of the domestic cut flower industry. The topic came up without fail, in almost every interview. While many people blamed cheap labor and subsidized transportation, tax incentives, etc., that foreign governments had offered their producers, many recognized that such benefits were no longer enough to assure importers of having a cheaper product. Many cited the extended holidays for labor and other benefits that were eroding foreign producers' (previous) cost advantages.

Many industry "survivors," however, had another view. Many assured this author that there was always room for a quality product, whether it came from South America, Holland, Israel or some domestic producer. One Florida grower, perhaps, put it best. He said, "A lot of people who've gone out of business blame imports. My feeling is that a lot of those who've gone out, should have. They weren't a credit to the industry. They produced junk and often ended up gouging the market at holidays with higher prices." He later continued, "The South American growers have certainly made better businessmen out of those of us who are left." Perhaps remaining growers were also the better horticulturists as well.

### Opportunity Costs for Producers

Whether or not growers (or for that matter some wholesalers or retailers) will even be around in the future may be more than just a question of pure and simple competition. The topic of the opportunity costs of remaining in business in a particular location or in business at all was discussed by many interviewees. Rising energy costs, labor problems, zoning problems and competition from imports or others certainly added to the doubt. Yet, it is the list of alternatives to remaining in the floral business, itself, which often becomes the deciding factor of whether or not to remain in business.

Perhaps the most noticeable alternatives cited to remaining in business were those involving real estate and retirement. Probably most obvious in parts of California and Florida (two fast-growing urban states), having opportunities for selling the land for condominium development or other housing opportunities had convinced many growers to "throw in the towel." As a matter of fact, when this author was asked about the Florida cut flower industry during his travels, this author was often forced to reply that, "The industry had moved to Miami International [Airport]. The Florida growers, for the most part, were raising condominiums." Visits to Stuart, Florida, found many high-rise condominiums shading the strings of lights that hovered over what were once fields of pompon chrysanthemums. The scene was repeated near the gladiolus fields of Ft. Myers and throughout much of California. Other more isolated examples appeared in many other areas. The typically level ground upon which most greenhouses were built, along with fairly



good drainage and a convenient water supply, actually attracted builders, according to several of those interviewed.

Urban sprawl has meant that many greenhouse ranges had suddenly "acquired" schools, houses, condominiums, office buildings and/or interstate highways as neighbors. Unexpectedly having urban neighbors often presented problems. It was not only the complaints of the new neighbors, the zoning boards, the pollution, etc., but it was the realization that remaining in a business which gave marginal returns, at best, and which offered some new "urban headaches" might be nothing short of being quite foolish, that caused businessmen to relocate or retire altogether. (One California grower, who had been sandwiched in on all sides by apartments and houses (but who was "protected" in his location by California's "Greenbelt Law" or Williamson Act--properties remaining in agricultural production cannot be forced out of production by zoning or other changes), admitted to occasionally having checked the wind before spraying in the greenhouse to make sure that he was about to "get" the neighbor at whom he was currently the most mad.)

One Florida grower said that the opportunity costs of raising 370 acres of gladioli were too high. "I can raise 70 acres of statice and baby's breath and get the same returns that hundreds of acres of gladioli used to bring, and with a lot fewer headaches, too!" One can bet that selling the excess land in such a situation makes leaving the gladiolus business a little more bearable.

Many people have maintained that, "Farming is just playing caretaker of the land. The real business of farmers is real estate." This statement can be said of many growers in the cut flower business as well.

There are, of course, other alternatives besides real estate, which faced flower growers, and in some cases these alternatives had convinced growers to leave flower production. One such alternative was to switch production facilities into raising potted blooming, foliage or bedding plants. Many former flower growers had done this. In Florida, many growers had found fruit and vegetable production an enticing alternative to raising flowers because of available market channels. Several flower growers were also raising citrus and a few were even raising cattle. One flower grower was a former vegetable farmer and was contemplating moving back into vegetables.

At the retail level, this author found many retailers who were also school teachers. It appears that school vacations typically hit during the peak holiday periods of the flower business. This enabled teachers to teach and have one or two people running a shop, and then to be in the shop during peak periods, when extra supervision was needed.

The existence of progeny who were interested in joining the business often affected decisions. Many industry people had retired or switched businesses when there were no relatives "coming along." The hope that a son or daughter might want to go into the flower business seemed to keep many operating. Disappointment from disinterested children often shut a business down.

### Consumption

Another change about which there had been a lot of press, but about which not many people directly spoke until specifically asked, was the issue of the time or the occasion of use of flowers. Retailers, wholesalers and growers all seemed despondent when asked about sales.

"Sure the holiday sales are up, but the other 360 or so days of the year aren't much," lamented one retailer. Others concurred.

To most retailers, talking about sales brought to mind thoughts of the changing character of "the mainstays" of the industry. These primary occasions included the non-holiday, but regular occasions for which flowers were often sent. Funeral business was down and florists, gladiolus growers and florist organizations' personnel knew it! Retailers blamed the funeral directors for their woes. There is a Florists' Information Council at SAF to tackle the "Please Omit"'s. (It should be noted that some gladiolus growers blamed retailers and the wire services for always having featured gladioli for funeral pieces and for nothing else. One gladiolus grower stated, "It takes a lot of talent to work with gladioli and there are a lot of easier flowers for retailers to work with. Furthermore, they're large flowers, and retailers are trending towards making smaller arrangements with fewer flowers--thus leaving the glads out in the cold.")

As for weddings, retailers reported that it was hard to convince some people to have flowers. "With many marriages today, you have the second- and third-timers who just don't go the whole way for the repeats." The other factor is that, "The children of the post war [WW II] baby boom are, for the most part, finishing up with their twenties, and that's when the biggest bulk of marriages occur," agree several florists. However, some florists did report that the June wedding season was now running from late May up until the beginning of August. "This is partly due to brides having difficulty in getting chapels and caterers of their choice, as much as anything else," said one florist.

Speaking of other occasions like anniversaries, birthdays, hospital illnesses, etc., raised the issues of competition and cost. First, there were many other products competing with flowers, such as gifts from candy to perfume. The second factor was cost. "Today, even a card, by the time it is mailed, can easily cost a dollar. That's plenty for many to spend, and flower prices certainly haven't dropped," confided several people.

It appeared that holiday peaks and valleys of the industry had widened in the eyes of many. Many thought that 1981 was their best Valentine's Day ever. The weeks that followed were horrendous for most. Most industry personnel said that the peaks were higher and the valleys were deeper; they expected the fluctuations to increase in size in the future.

Other industry persons thought there had been a definite change in the importance of the various holidays. Many claimed their Valentine's Day to be the best holiday in gross, with Mother's Day their best holiday in terms of the number of units sold. Christmas was considered an entire season and was hard for many to rank. Beyond these three big holidays, there seemed to be a mixed voice. Pot plant growers still seemed enthusiastic about Easter, but others claimed, "It's simply not a cut flower holiday." There was a definite feeling about "writing off" Memorial Day, except for small pockets of business near the Rocky Mountains. "It's no longer any better than just a good week," was repeated by retailers, wholesalers and growers. The only other holiday of note was National Secretary's Week; this was climbing fast in importance for many in the industry, especially those in large urban areas.

Beyond the holidays, some discussed the Friday Flower Feature advertisements of the American Florists Marketing Council (AFMC). Many felt the program had merits that they were able to translate into dollars. Some florists had one or two people making up special bouquets for their Friday features; others ignored the promotion altogether claiming that they were usually too busy to get around to making up any specials. One retailer offered three different specials which he advertised in Thursday and Friday newspapers; the florist sold mixed bouquets and two types of arrangements, all of which were featured in his ads. Many florists relied on wholesalers to make up mixed bouquets for them for Friday specials. Most who participated liked the Friday Flower Feature, agreeing with AFMC that the ads provided an extra 52 "mini-holidays" during the year.

One industry observer had a quite contrary attitude, however. "I hope we don't create another holiday," he said. "Holidays are terrible because they reinforce the peaks and valleys. That Friday Flower business is one of the worst things to happen! Why Fridays--why not Tuesdays. We tell people to buy flowers on Fridays and then, if they're like me, they're out on the weekend. What we should have is Monday or Tuesday flowers. How about Tuesday flowers, that's when people would get to enjoy their flowers at home for awhile--and learn to enjoy them while they're fresh." An interesting observation, needless to say. Florists were typically very busy at the week's end anyway. "Deemphasizing a Friday flower," he continued, "would open up the flower business to 365 days per year, instead of just another 52."

Floraboard

Somewhere in this discussion of changing purchasing habits, the topic of Floraboard usually arose. Floraboard, the proposed national research and promotion act, had its backers and its foes. At the time of this travel, however, there seemed to be much uncertainty as to what the program was and how it would affect the industry and its participants, if passed.

Many in the industry were very vocally in favor--some, who were so depressed with the state of the industry, saying they were afraid of what would happen if Floraboard failed to pass in industry voting. Many hoped that Floraboard would "Europeanize" the American buying public, thereby creating a flower demand 365 days of the year and not just five or just 52 days. Floraboard was definitely that "glimmer of hope" in the eyes of many.

Part of the hope for Floraboard's success was that it might provide the impetus for change in the public's buying habits. The hope was, that although peaks and valleys would probably remain a part of the industry, that the valleys would be somewhat filled in, so that the level of sales in the "off-peak times" would rise tremendously. Subsequently, it was hoped that total industry sales would rise.

There were a few scattered florists with extensive advertising or other promotional campaigns, who already were reporting some success in levelling their sales troughs, however. For the most part, these florists seemed in favor of Floraboard's approval, often citing knowledge of what promotional efforts could do for sales. Some noted, however, that it would take similar promotional programs, on an

individual florist basis, in addition to the proposed industry advertising, for any individual florist to denote great changes in sales level patterns.

On the other side of the issue were detractors, and these seemed to be composed of three groups. First was the group of people that did not like Floraboard because they did not even know (and in some cases, had not even heard of) what Floraboard entailed. When explaining the basis of the program to those in this first group, one could note a definite disapproving look in their eyes and sound in their voice as soon as the the word government was mentioned. (One definitely got the feeling that some people were trying to hide something--"the real set of books, as opposed to those for the banker or the third set for the IRS" or something, as one person suggested, "and that word 'government' scares them." From his travels, this author would have to concur. In travelling down one road (that was the right road, so he had been assured by someone who had warned him--otherwise he would have certainly turned back), this author saw dozens of "U.S. Government--No Trespassing" signs, in the traditional red, white and blue pattern.)

The second noticeable group of disapproving people included some that were acquainted with Floraboard but were against it for various intra-industry political reasons. One such person claimed he was anti-Floraboard because he, ". . . wasn't about to help establish a market for anyone else--especially the foreigners. . . ."

Others felt that they, as growers, for instance, should not have to sell the product. One grower said, "Selling is the job of retailers. With the exception of FTD and the little bit of advertising by the

others--which doesn't even amount to anything--the retailers don't do a damned thing to promote their product. Our job is to grow it. Let them sell it." The voicing of these sentiments was not uncommon.

Finally, the third quite noticeable group of anti-Floraboard people was composed of many European growers who claimed that they had come to this country to get away from government regulations, which had often dictated what would happen. Such growers felt that Floraboard, as proposed, was very similar to the proposals that eventually had led to the flower auctions of Europe. Several European growers said that they had come to the United States to get away from the auctions. Several of these growers said that it was much healthier in the U.S. "In Holland, for instance, you just grow. They don't ask if there's room for it on the market. They just grow it. Here, you're a grower and a marketer. Here, there's a better contact between the grower and the market. If I have too many flowers one week, I work to sell them. Over there, they just would get dumped," said one grower, whose thoughts were repeated by several others. He continued, "Our flowers will make their own advertisement. We don't need to advertise. Besides, how can we talk about advertising when we don't yet have good quality--30 to 40 percent of the flowers don't even belong on the market."

Finally, neither for, nor against Floraboard, at least at the time of the interviews, was another group of industry persons. Although some had not yet made up their mind, these are not of whom this author writes. Instead, there appeared to be a group of people who were afraid to voice an opinion publicly, either because they were alone in a crowd of adversaries, or because they just did not feel that they should speak (or could speak without some jeopardy), lest they influence some people



(favorably or unfavorably). These people, when asked, often replied, "No comment." When the pen and pad were put down and assurances were made that they would not be quoted they often did voice an opinion. Most were for Floraboard; some were against it.

#### Mass Marketing of Floricultural Products

Another major industry innovation of the last several years, which was expected by most to change the industry even more in the future, was the mass marketing of floricultural products. It was partly this mass marketing that some believed would be the major force in the sales pattern-levelling process. The premise of the mass markets, is to bring product to the masses. (It should be noted that the term mass marketing derives from bringing product to the masses and not from marketing mass quantities of merchandise--the latter being a result of marketing to the masses and not an origin for the term.) Hence, it was felt that if product was widely and conveniently available, product that would include floricultural products, more people would buy that product. Having flowers available in supermarkets, discount stores, malls and other shopping centers (and hence, including shopping mall florist outlets of aggressive florists among mass markets), would certainly contribute to a wide availability of flowers and, hopefully, to increased floral sales.

Probably the most noticeable change that had occurred with mass markets had been in the mass markets themselves. For several years, supermarkets and discount stores had carried foliage plants, bedding plants and landscape ornamentals. More recently, however, there had been an excursion by some stores into the realm of cut flowers.

Perhaps one of the most advanced examples of supermarkets carrying cut flowers of which the author was previously aware is Buehler's Supermarkets in Northeastern Ohio. This small rural chain maintained virtually complete flower shops within most of its stores. The stores with floral shops were staffed with at least one designer (sometimes two or three) on duty at all hours that the store was open. Buehler's had made wedding, funeral and hospital arrangements for many years and had experimented with delivery on a limited scale; customers were allowed to contact store personnel about off-time delivery of arrangements, for example, on their way home from work.

Several chains were visited during these travels. The Giant Foods chain of Maryland, Virginia and Washington, D.C. had for years maintained plant areas in most of its nearly 130 stores. In all relatively new stores, the floral area also contained cut flowers, potted blooming plants, floral supplies and dried flowers. These areas were positioned first in the stores, so that shoppers getting carts were on the edge of the floral department. Customers were forced to travel up one of two aisles; one aisle ran between a flower cooler and the potted blooming plants, while a second ran between the potted blooming plants and the floral supplies. Shoppers again saw this department from different angles in the store while shopping the produce department and canned goods aisles. The floral design station, which was located in the center of the department, was manned for 40 hours per week. In the absence of the designer, shoppers were directed to the neighboring produce department for assistance. Giant Foods had even established its own floral distribution center, in a separate facility from its other warehouses, for supplying its stores with floricultural items--

literally a wholesale house for its stores. Their product line often went well beyond the major species and often included flowers not found in many traditional flower shops.

The Ralph's Grocery Company and Alpha Beta Supermarkets were two big California chains; both carried cut flowers in addition to foliage and potted blooming plants in their Southern California and San Francisco area stores. Alpha Beta had signs in every flower department offering customers the opportunity to charge their floral purchases (on a major national credit card) at the store's office, hence offering one of two services (the other being delivery) usually reserved for traditional outlets.

The Kroger and Jewel Foods chains in the Midwest were other examples of chain stores which had ventured into cut flowers, in addition to other floricultural products.

Mass markets are changing the retail florist industry's look. Traditional retailers probably have some added competition. While there was great debate as to whether or not mass markets hurt the traditional retail industry, most of those interviewed suggested that the more available flowers were, the more consumers would get used to seeing and using flowers. Hence, it was hoped, all parties concerned would benefit. In some cases of full-service mass market floral outlets, however, one would at least have to admit that the potential for some serious competition might be present.

Mass marketers were providing the industry with some new partners in full-service outlets (which included credit and delivery services). At least a handful of supermarket outlets had already obtained memberships in the traditional wire service organizations. A new wire

service, Trans American Floral of Paragould, Arkansas, has even been targeting its service to mass merchandisers. Most wire services, such as Florists' Transworld Delivery Association (FTD), the largest organization, remain composed almost exclusively of traditional retailers, however.

Supermarkets have and will continue to influence the traditional retail segment in its marketing style as well. Many retailers had adopted the strategy of exposing product to the public by placing some cut flowers in containers on the floor--outside of the floral cooler. (Except for a few flowers being forced, this was almost unheard of a few years ago in many traditional outlets.) Some retailers had even displayed flower carts outside of their shops to attract attention. The mass merchandiser's habits of pricing all products, using point-of-purchase posters and widely advertising the products in newspapers with pictures had all been adopted by some traditional retailers. Some florists had even joined with supermarkets in cooperatively servicing, stocking and, occasionally, supplying personnel for the flower departments, although this seemed to be on a store-by-store, or small chain basis, for the most part.

In any case, one would have to admit that, in areas with mass markets which are regularly involved with flowers, the mass marketers often provide a greater exposure of flowers to the public. This is usually on a more recurring basis than with many traditional retailers as most consumers shop for groceries more frequently than they shop (specifically) for flowers. Any increase in the everyday use of flowers, hence, may in fact, result from mass merchandising strategies or from the actions of progressive and aggressive retailers who make

flowers readily available. The future remains to be seen, but if the recent expenditures of some supermarkets in floral displays provide any indication of the future, mass marketers are probably not going to go away.

### Market Structure

The final area of industry change that was frequently discussed had to do with the future structure of the industry, and mass marketers, it was thought by most, would probably be a big determinant here as well.

Many people believed that the florist of the future, whether due to the economy, competition from other florists, mass marketers or other competing products or due to the public's flower buying habits, would be a much larger florist than the average florist was currently.

Reasons for these feelings varied. Some believed that mass marketers would put many retailers out of business. This feeling should be differentiated from the initial threatening feeling that was widely reported years ago when local supermarkets first experimented with flowers. This, instead, was a feeling, perhaps more justified, that was based on consumer buying habits. It was felt that since mass marketers were located where people frequented (as opposed to many traditional retail florists who were not always located in prime areas--perhaps a phenomenon left over from when many flower shops with greenhouses situated themselves on the outskirts of towns), they would likely become the place of convenience. Shoppers would pick up their weekly, and in some instances, even their occasion-oriented purchases from their supermarket florists. After all, the mass marketer would be on the way, would provide easy access and plenty of free parking (not always

available at the traditional flower shop) and often would allow for the running of other necessary errands while in the vicinity. This might become especially relevant if mass marketers take on more of the design services now associated with the traditional industry--services which had already been adopted by many mass marketers located in the big urban areas.

The result, if the above becomes a reality, followed one of two hypotheses. One thought was that any remaining florists would be large out of necessity, if only to provide enough capital to weather the storms of the peak and valley buying patterns. Remaining florists might be the city's florist. They would be highly specialized and might be consulted only for funerals or weddings or other occasions requiring very elaborate floral pieces. These florists, it was felt, would house the "true designers" of the profession, with the less distinguished designers, in many cases, becoming employed by the supermarkets themselves or, perhaps, by wholesalers who might be supplying finished arrangements to the mass markets. The other forecast was that any remaining florists might be multi-shop locations, with at least some of the outlets, being located in these "on the way" locations, in shopping malls, etc. These multi-shop firms might even have a centralized design center. Many people believed that, in either case, the successful florist of the future would have to have some market power (to successfully compete) to order flowers in large quantities, perhaps, directly from growers or grower/shippers.

One other proposed theory relating the retail segment to the future industry structure was that of integration. Many growers had vertically integrated; many wholesalers had vertically integrated as well, and, in

some cases, retailers too had vertically integrated into other levels of the market channel. Some believed that, in an effort to achieve market power, the industry might "come full circle," resulting in something similar to the days when most retail shops had adjoining greenhouses. In this conjecture, however, it was proposed that the various operations might not have the greenhouse "out back" but might, instead, be much more elaborate entities with operations across the town, the state, the country or the sea. Some evidence supporting this was seen, as some wholesalers had retail operations and/or growing operations located in other cities. The Miami shipping operations of Colombian growing facilities provided another example. One Florida grower/shipper was affiliated with a retail firm in the Carolinas, and many growing firms such as Denver Wholesale Florists and Hill's Roses reported wholesale outlets scattered clear across the United States. Veldkamp's of Denver was a case of a multi-shop retailer with growing facilities; other similar examples were not hard to find. Some market power might be achieved by such integration, eventually leading to larger and larger retailers, with bigger capital bases.

Finally, some people believed that the retailing segment's typical firm would grow larger but that there would be fewer in number because of a diminished market. As inflation and the economy force flower prices up, many people might turn to other items for their typical occasion gifts, reserving floral expressions for "that truly ultimate occasion." Candy, perfume, jewelry and even the simple greeting card have already made inroads into areas once habitually considered flower-giving occasions. Such erosions may necessitate a change to fewer and larger florists--"the fittest who survive the storms."

The wholesale segment of the industry was expected, by many, to be under much strain in the future, yet it was expected to survive. If the mass market becomes the dominant force in the industry, there was a feeling that some mass marketers, unhappy with the (lack of) service of the traditional wholesalers, might try to bypass middlemen and buy directly from growers or grower/shippers. Many, if not most mass marketers already were buying foliage and potted blooming plants directly from growers, especially at holiday periods. While the same might be true of traditional retailers, mass marketers were often reported to be better planners and quicker payers than the traditional industry; thus some mass marketers had a strong rapport with potted plant growers. A direct-purchase trend might be even more acceptable to grower/shippers and chains alike, if the chains set up wholesale florist-like outlets, similar to the company distribution center of Giant Foods.

Anticipating this possible future trend, many wholesalers and shippers had established separate divisions to cater to the mass market, in an effort to maintain a niche with mass marketers; others were preparing to do the same. At one time some wholesalers and shippers had made such moves to hide mass market contracts from traditional retailers, who might have threatened retaliatory actions had they lost business. (Some wholesalers who had dealt with mass markets formerly made deliveries at night in unmarked trucks for these reasons.) However, some middlemen were finding that there were efficiencies to be gained by separate handling of the typically larger mass market accounts. Separate sales personnel, billing departments, packing departments and other efficiency related reasons were cited by



several persons. Some firms had even set up totally different subsidiaries for this purpose.

In other cases, some predictions were made suggesting that the middleman might become more, rather than less, important as mass marketing of cut flowers evolved. Examples supported these conclusions. Some middlemen in the Chicago area, for instance, had found it profitable to set up design centers for mass production of completed flower arrangements for mass market sales. The arrangements were completed down to the care tag and the price tag, if requested by the retailer. In this arena, mass marketers carried more than just bunches of flowers in their coolers and still required no in-house designer on duty. (Chicago area stores had, for the most part, positioned someone part-time in their floral departments, however; this person often had no design duties and merely waited on customers and provided plant care and general department maintenance. In stores carrying similar arrangements found in other parts of the country, no store personnel were involved.

Others believed that the middleman's role would involve the assembly of "consumer packs" of flowers. Mixed bouquets and other bunches of flowers, which usually contained fewer flowers than traditional wholesaling bunches, were popular items in mass market outlets. Although some growers had prepacked these bouquets at the farm level, many supermarkets and other outlets found it more convenient to have local suppliers for such merchandise due to the vagaries of consumer demand patterns.

Finally, many believed that mass marketers might call upon middlemen to fill a service role. This service role, it was predicted, might involve middlemen delivering merchandise to store doors or even to

the display. In the latter case, the display deliveries might be coupled with a maintenance service of the floral section, hence providing a role not dissimilar from the mass market actions of full-service dairies, breadmen, health and beauty aid distributors, soft drink or other supermarket jobbers. While some mass marketers had already assigned a full- or part-time employee the responsibilities of straightening their displays, discarding dated merchandise and handling other display maintenance duties, it was the to-the-store-door delivery aspect of the service that was most talked about for the future trend here. Some firms had taken these services a step further by renting the entire store floral space to a wholesaler (or retailer) for mass market floral sales.

Outside of the influence of the mass market (perhaps) was the uncertain role of the middleman's involvement with the traditional retailing industry. If retailers diminished in number and if those that remained grew tremendously in size, there might be little need for the middleman. Here, the few large urban area retailers would buy directly from growers or grower-shippers. On the other hand, most people believed that, especially in the more rural areas of the Midwest, retailers would remain relatively unchanged in nature; wholesaling activities might remain relatively unchanged here as well. These were mostly very long term expectations by those predicting them.

On the more short term, it was felt, by some, that wholesalers would become quite a bit more important. Retailers, in an effort to keep costs low, were cutting their perishable inventories, relying on the local wholesaler more and more frequently. Many retailers were demanding and receiving, usually at a cost, more services such as

split lots. Hence, some felt wholesalers might absorb some of the shrinkage problems of the retailer.

One somewhat related issue that often arose was that of standing orders. Many grower/shippers had commented that there was always a group of wholesalers requesting standing orders at set prices (which were usually lower than holiday prices) in the fall and winter months. Similarly, there was apparently always a group of wholesalers trying to get out of their standing orders after Mother's Day, as the summer doldrums approached. Some grower/shippers had tried to accommodate those wholesalers, but most seemed to shy away from such agreements. In any case, it appeared that the question of letting previous market participants share in the shrinkage problem moved throughout the system.

In more remote areas, most suggested that some kind of middleman would be retained. Most felt that the only way to get flowers to rural retailers was by the wholesale delivery service of routemen or other functionaries. In these cases, the middleman's delivery role had always been more important than in urban areas. It should be noted, however, that wholesaler delivery services had sprung up even in some of the larger urban areas.

Finally, if the retail structure did not undergo a radical change, it was felt that neither would the wholesale segment. Most wholesalers responded that retailers would always need a wholesaler for their service. Some wholesalers, however, were hard pressed to define that service in terms other than providing a "quality" product; one industry observer, however, suggested that the service was one of banking. He said that middlemen were ". . . not willing to take the responsibility of determining flower quality . . . they've never gone beyond the role

of cooling beer." He continued, ". . . but there'll always be a middleman because there'll always be a dumb florist to use him as a banker . . . it's the banking, certainly not because of any other service they provide." Another industry person had a slightly different attitude, but reached a similar conclusion. He said, "The middleman is going to become a service man, looking out for the welfare of the producer and the consumer. He always was a parasite, making whatever he could off the buyers. But he cannot continue to operate this way. He's got to provide service. If he performs services the way he should, he would become more deeply entrenched . . . ."

#### Other Miscellaneous Concerns

After the discussion on industry changes and future trends, inquiry was often made, into one or two other areas to gain some further insights into the industry. One question often asked was related to costs and the competitive environment. Operators were not asked about their costs *per se*, but instead, were asked whether they ever had difficulty in raising prices sufficiently to cover costs and yet, remain competitive.

Responses were as expected. Most interviewees said that if you did not get some complaints when you raised prices, then you were probably selling too cheaply to begin with, and that if you got too many complaints, you were hitting an upper limit. Most felt that inflationary attitudes had set in to the entire population and that people, by and large, expected price increases, at least on a yearly basis.

Growers were not always as nonchalant on this issue as were middlemen and retailers. Many growers said that they could only play the

market, and, in many cases, they were receiving less for their flowers than they had several years earlier. Pompon and standard chrysanthemum growers were, as a group, especially upset in this regard. Many chrysanthemum growers claimed that their non-holiday prices were lower than even a decade previously. Furthermore, they noted that the amount they had received 10 years earlier had had a lot more buying power. Rose growers, wholesalers and retailers were not, as a rule, as pessimistic on this topic, however.

This question about raising prices also often "opened a can of worms" among wholesalers and especially growers, who used the opportunity to ridicule the typical retailer's pricing structure (that is, if they had not already taken another opportunity to do so). Most growers and wholesalers were able to justify the higher flower costs at holiday time. (Timing the crop, it was claimed, often required extra heating, labor, etc. The costs of raising flowers in the winter were also cited.) They then dared retailers to do the same. "It doesn't cost a damn cent more to arrange flowers on February 14th than any other day of the year," was how one grower put it, and his sentiments were seconded by many. One wholesaler commented on what he considered to be the problem--that of the three to four times markup used by most retailers. He said, "I have no qualms with a retail florist who takes cut flowers and arranges them, puts them in a container, and gives some service, etc., but for a pot plant where all they do is wrap it in foil and maybe add a bow, giving it the same three times markup is ridiculous." Many concurred.

Many growers, wholesalers and retailers alike indicated that slow-paying customers were a problem. Although many claimed that this had

always been a problem and always would be, several firms took the matter more seriously. More than one wholesaler indicated that retail florists had "gone bankrupt on me." These, interestingly enough, apparently happened most frequently during the post-Mother's Day period. Several wholesalers indicated that this time of the year had always meant that the accounts of at least one or two firms had become bad debts and usually of the "permanently uncollectable variety." Growers indicated that wholesalers were just as bad in this regard; growers were becoming more selective in to whom they sold as a result. Many firms were switching accounts to a "cash only" basis, not even accepting checks for payment. Some growers suggested that the industry should adopt a uniform credit policy and perhaps even a policing mechanism. Retailers, too, complained of slow paying customers. One retailer said, "Our mothers may have carried us for nine months but we cannot afford to carry the consumer for the same length of time."

Transportation problems seemed to be plaguing many firms. Just making retail or wholesale deliveries in many urban areas was a problem on which many firms commented. Not only were costs of fuel, labor and vans increasing, but the time needed for making deliveries had drastically increased due to the urban congestion of many inner cities and the urban sprawl of many suburban areas. One suburban Denver area florist had an elaborate schedule of delivery costs, based on which suburb the party lived in and on the cost of the item being delivered. Delivery service ranged from \$1.50 to \$6.00, in 50-cent increments. Comments on grower-to-wholesaler deliveries ranged from, "No problems" to "There's a long, long way yet to go."

Interviewees were occasionally asked about their thoughts on the jobs being done by various organizations to which they belonged. Retailers seemed to be happy with FTD, although some complained of FTD's recent venture into the container business. The jobs of the other wire services brought little comment. Rose growers seemed generally happy with Roses, Inc., although a few seemed only acquiescent about the U.S. International Trade Commission actions of this organization; some responded that they were happy with the organization for the most part but thought that this particular activity was a waste of money for a losing cause. One rose grower said that for his money, Roses, Inc., should research ways of making domestic growers more competitive (better growing methods, etc.), rather than trying to eliminate the competition.

As far as SAF was concerned, many felt that it was doing well, considering its impossible job. Most people realized that it was almost impossible to try to satisfy the desires of growers, wholesalers and retailers under the auspices of one organization, except for such things as social events. Still, most persons appeared satisfied with what they got for their dues.

The only other topic on which several people commented was one on which comments were not solicited, but one on which comments should have certainly been expected. There seemed to be interest by many in what this author was doing; some voiced antagonism towards academic research. A few commented that the problem with a lot of industry surveys is that they ". . . tell us everything that we already know" or that ". . . by the time they get it published, it's no longer valid." Then there were several people who, totally unsolicited, focused on specific researchers, studies or institutions and complained of the ". . . junk

that gets published under the veil of supposed research." Several people noted that, in their opinion, various research lacked objectivity and ". . . is not even academically sound." Several questions were raised as to the applicability to the real world of various studies.

### Concluding Thoughts

Travelling across much of the United States, parts of which this author had never before seen, can be quite impressionable; travelling across the United States to witness the cut flower industry first hand was definitely exactly that! This author began the travel believing that he had a reasonable knowledge of the industry. At the journey's end, the prior belief was somewhat confirmed. Yet, this travel experience was anything but disappointing. A feeling of "justifiable substantiation" for overall industry impressions was gained, most assuredly. The details, however, were exposed.

Perhaps the first overall industry impression gained was that there were probably some very grim days ahead. When one asks an industry leader about the problems of the cut flower industry and he responds, "There are no problems in the cut flower industry!" one immediately becomes aware that the industry has problems! When travelling through New England, seeing greenhouse after greenhouse with broken glass, plenty of weeds and the omnipresent "For Sale" signs, one realizes that the industry has problems. And, when one Miami importer practically cries when asked about business during the period just following Valentine's Day, the presence of industry problems is forever reinforced.



Yet, there is a glimmer of hope that gets reinforced, too. Seeing a new and young operator "making a go of it" in Massachusetts brings an air of hope. Seeing a Minnesota rose grower beaming over his new greenhouse additions adds a glimmer of hope. And hearing Yoshimi Shibata tell the listener that he, as well as most people, would do anything and everything that had to be done to survive, shouts hope and enthusiasm at that listener. There is hope out there, and in some cases, the hope is justified!

Many people believe, this author included, that there will be a great change in the industry. There are many industry participants who may not be participants of the future. This thinning out will be for the good of the industry, certainly if one believes in the survival of the fittest. Many believe this thinning out is indeed necessary.

Beyond this philosophy, two points, somewhat related, stand out. The first is that there is a tremendous lack of trust among industry participants. Although some of this distrust is, perhaps, better called dislike for other groups in the marketing channels, some of this feeling is indeed a questioning of the honesty and integrity with which fellow growers and/or fellow wholesalers and/or fellow retailers operate. One often hears comments like, "It's a great idea, but how will you keep others from cheating on the system?" when talking about issues relating to the marketing of flowers. Once, when relating a story to a wholesaler about how a previous industry participant had answered a question, the wholesaler responded that ". . . you should have told him [the first person] that he could take his answer and use it for fertilizer." This immediate suspiciousness was somewhat surprising.

Secondly, and perhaps because of this mistrust, is the impression received that many industry participants did not really know what others in the industry were doing. While some retailers knew what other retailers were doing, and some wholesalers knew what other wholesalers were doing, few retailers knew about the business practices, the problems or the general operating atmosphere of the wholesaler. The reverse was also true, and neither of the parties typically knew of the trials and tribulations of most growers. In short, there did not seem to be a great knowledge of the industry, by the industry participants--whether across industry segments, across the country, or, in some cases, just across town.

Travelling over 15,000 miles to view an industry, occasionally exposes one to an event that makes the trip even more educational, enlightening or interesting. Some of these events are as simple as finding out that ordering a cup of coffee in Boston means coffee with cream, and that to get "unadulterated coffee" one must request "black coffee." Some of the humorous events, however, are really quite shocking, if thought about.

During his first week in California, this author had the opportunity to view a protea field. In order to capture it on film, climbing up a mountain side and perching among a grove of avocados was required. One certainly is forced to re-evaluate one's prejudices towards the high cost of both proteas and avocados after such an experience. A burro might make the trip, but driving a vehicle to carry the harvest seemed to be a questionable proposition.

The vastness of California's production itself fills one with a sense of awe. Seeing acres and acres of flowers, many raised without

any protection, makes one wonder how Northern growers can survive. Even using cheap sources of fuel such as sawdust or woodchips to heat green-houses, as in New England, cannot be as cost efficient as raising crops without any protection or any fuel. Yet, it is the particular niche that these Northern growers fill, that California growers and, for that matter, South Florida and South American growers do not fill, that makes the drive of the Northern growers that much more admirable.

Certainly admirable are the efforts of Long Island growers who have united to form the Empire State Plant and Flower Auction Cooperative, Inc. This auction market has developed, amid a lot of doubt, into a Dutch style auction complete with clock. Although largely potted merchandise instead of cut flowers, and largely composed of lots much smaller than one would find in Holland, it is amazing the sense of accomplishment and pride that these growers display. Four-inch geraniums were bringing as much as \$1.56, and six-inch geraniums almost \$3.00 more (\$4.54), on the April morning in 1981 that this author attended the auction, and these were wholesale prices.

One certainly cannot omit talking about the 28th Street Terminal Flower Market of New York City. All of the horror stories of what goes on are not necessarily true--but many of them are. Arriving at the market before the sun had risen and viewing the happenings for about four hours total, seeing boxes piled on sidewalks (often partially blocking entrances to the wholesale outlets) and cars double parked (and those cars that were moving doing so in single-file, and very, very slowly) is truly an experience. The author was talking with a wholesaler who had just completed a sale. Two minutes later, the previous customer returned and dropped his merchandise on the table.

The wholesaler immediately felt threatened with the thought of having to make a refund. "What's the matter?" he asked. The client responded, "My car--it's gone! They've towed my car!" Although this author had previously heard about such happenings, actually witnessing them was a sight to behold. This explains why several retail florists routinely hailed taxicabs, placed their merchandise in back seats and told the drivers to take the product to their shop and that ". . . they'll pay you, when you get there." The sequence was reflected from wholesaler to wholesaler, taxi to taxi. A little unusual, maybe, but not for 28th Street in New York City.

Having had the opportunity to experience such happenings and to meet the leaders of the industry as this author has, certainly forces one to publicly acknowledge that fact and thank the industry for that opportunity. Having written a "travelogue" of the experiences reinforces their having occurred. Thanks are extended to the industry and its personages for sharing these experiences and for their honesty. The education certainly has been gratifying. This author hopes the industry finds the investment to have been worthwhile.

APPENDIX B  
PERSONS AND FIRMS CONTACTED DURING  
THE AUTHOR'S 1981 TRAVELS

This appendix contains a list of persons interviewed and firms visited in conjunction with travel on the SAFE Endowment grant. Although most of those listed were interviewed in person, a few were interviewed via telephone. Firm names, alone, are listed, when no one was specifically interviewed. Yet, in over 90 percent of these cases, there were interviews conducted. The list is as follows:

Al Adreveno  
Daylight Nursery  
Half Moon Bay, California

Lyle Akey  
Operations Manager  
Golden State Wholesale  
Florists, Inc.  
Union City, California

Amlings' Flowerland  
Chicago, Illinois

Tim Anderson  
Daisy Flower Farms  
Miami, Florida

Tom Andros  
Sales Manager  
Montgomery Roses  
Hadley, Massachusetts

William Armellini  
Regional Vice President  
Armellini Express Lines, Inc.  
Miami, Florida

Stanley Bachman  
President  
Bachman's, Inc.  
Minneapolis, Minnesota

Rubee Bailey  
Federal-State Market News  
Service  
Chicago, Illinois

Jonathan Barr  
Sunbay Farms  
Watsonville, California

Peter A. Barr  
Vice President  
Sunbay Inc., Wholesale Florists  
Watsonville, California

Axel Behnke  
Mutual Cut Flower Co., Inc.  
New York, New York

Ken Benjamin  
Publisher  
Flower News  
Chicago, Illinois

Seward Besemer  
University of California  
Cooperative Extension Service  
San Diego, California

I. W. Bianchi, Inc.  
East Patchogue, New York

Eddie Black  
Black's Wholesale Cut Flowers  
New York, New York

James Bonaccorsi  
Golden Gate Florists  
San Mateo, California

Donald E. Bonebrake  
 Director of Floral Buying &  
 Merchandising  
 Ralphs Grocery Company  
 Los Angeles, California

Ken Brewer  
 Operations Manager  
 Tropical Plant Rentals  
 M. Leider and Sons, Inc.  
 Prairie View, Illinois

Sonny Burnside  
 Buyer-Merchandiser, Floral  
 Jewel Food Stores  
 Melrose Park, Illinois

Leonard Busch  
 President  
 Len Busch Roses  
 Plymouth, Minnesota

Warren & Rich Carey  
 Carey's Flowers, Inc.  
 South Hadley, Massachusetts

Dr. Leonard Carrier  
 Plant Breeder  
 Encinitas, California

Sam Cavallaro  
 Wholesaler  
 Boston Flower Exchange  
 A. Cavallaro & Sons, Inc.  
 Boston, Massachusetts

Frank Cobb  
 Sandyland Nursery Company  
 Carpinteria, California

Colorado Floral Products, Inc.  
 Brighton, Colorado

Bob Coward  
 Burdette Coward & Co., Inc.  
 Ft. Myers, Florida

Jim Cozzolino  
 Half Moon Bay, California

Andy & Paul Cupp  
 Andy Cupp Greenhouses  
 Boston, Massachusetts

Dadeland's Flower Corner  
 Miami, Florida

Paul Daum  
 Fred C. Gloeckner & Co., Inc.  
 Miami, Florida

Jim Echter  
 Drahm & Echter  
 Leucadia, California

Robert & Steve Echter  
 Echter's Greenhouse  
 Garden Center and Nursery  
 Arvada, California

Paul Ecke, Jr.  
 Paul Ecke, Inc.  
 Encinitas, California

Empire State Plant and Flower  
 Auction Cooperative, Inc.  
 Bethpage, New York

Robert Ench  
 President  
 Flower Time Garden Center  
 Lindenhurst, New York

Ron Enomoto  
 Enomoto and Co.  
 Half Moon Bay, California

Robert Fattel  
 Alpha Floral  
 Santa Barbara, California

Xavier Fernander  
 President  
 Sunshine Import-Export Corp.  
 Miami, Florida

Don Flowers  
 President  
 Don Flowers Florists, Inc.  
 Randallstown, Maryland

Angelo Forrester  
 Wholesaler  
 Boston Flower Exchange  
 Carl Forrester & Sons  
 Boston, Massachusetts

M. Truman Fossum  
Marketing Facts for  
Floriculture, Ltd.  
Washington, D.C.

John Frazee  
Frazee Flowers, Inc.  
Oceanside, California

Ralph N. Freeman  
Cooperative Extension Service  
Suffolk County  
Riverhead, L.I., New York

Henry Fukutome  
H. Fukutome Nursery  
Watsonville, California

Gallup-Stribling International  
Carpinteria, California

Dan Gelfman  
Gelco International  
Miami, Florida

Giant Foods, Inc.  
Baltimore area stores  
Landover, Maryland

Glenn Goldsmith  
President  
Goldsmith Seed, Inc.  
Gilroy, California

Gideon Goren  
President  
Agrexco (USA) Ltd.  
Jamaica, New York

Fred Green  
Fred Green Greenhouses  
Stowe, Massachusetts

Jim Gwynn  
Federal-State Market News  
Service  
Chicago, Illinois

Dwight Haight  
President  
Colombia Flower Exchange, Inc.  
Miami, Florida

Robert Hall  
Robert R. Hall, Inc.  
Encinitas, California

Tom Harcharik  
General Manager  
Yoder Brothers, Inc.  
Chualar, California

Dr. Raymond F. Hasek  
University of California  
Davis, California

Edwin & Roy Hausermann  
Hausermann's Orchids, Inc.  
Elmhurst, Illinois

David Havice  
President  
Coast Wholesale Florist  
San Francisco, California

G. T. Hawkins  
Hawkins Flower Farms  
Ft. Myers, Florida

Percy Helveston  
Tamiami Flower Growers  
Ft. Myers, Florida

Hermes Floral Company  
St. Paul, Minnesota

Tok Hironaka  
California Flower Market, Inc.  
San Francisco, California

Gus Hodges  
American Cut Flower Co., Inc.  
New York, New York

George Holland  
Frank Manker Wholesale Florists  
Farmingdale, L.I., New York

Mas Hongo  
Manager  
California Flower Market, Inc.  
San Francisco, California



Ed Honma  
Manager  
Oregon Flower Growers Assoc.  
Portland, Oregon

Larry Howkins  
Vice President  
Continental Farms, Ltd.  
Miami, Florida

Dr. Joseph E. Howland  
University of Nevada, Reno  
Reno, Nevada

Ted Ikemoto  
TST Flowers, Inc.  
Salinas, California

Sat Iwasaki  
Iwasaki Nursery  
East Palo Alto, California

Dr. Elmar Jarvesoo  
University of Massachusetts  
Amherst, Massachusetts

John R. Johnson  
President  
J. R. Johnson Supply, Inc.  
St. Paul, Minnesota

Maureen Johnson  
Manager  
Conroy Flowers  
North Hollywood, California

Jack Kaufman  
Managing Director  
A. L. Randall Co.  
Prairie View, Illinois

Red Kennicott  
Kennicott Bros. Co. Wholesale  
Florists  
Chicago, Illinois

Dick Kingman  
Executive Vice President  
Colorado Greenhouse Growers  
Association  
Denver, Colorado

Dr. David Koranski  
University of Minnesota  
St. Paul, Minnesota

Harry Korematsu  
President  
Stonehurst Wholesale Florist  
San Mateo, California

Dr. Jay S. Kothe  
University of Connecticut  
Storrs, Connecticut

Larry Kuhn  
NYC Department of Agriculture  
New York, New York

Frank Kuwahara  
Executive Vice President  
Southern California Flower  
Growers, Inc.  
Los Angeles, California

Thomas J. Lavagetto  
Floral Merchandising Manager  
Jewel Food Stores  
Melrose Park, Illinois

Ken E. Lee  
Rainbow Flowers, Inc.  
Ruskin, Florida

Norma Leighton  
Sales Manager  
Monterey Flowers, Inc.  
Stuart, Florida

Lincoln Leong  
Ah Sam Florist  
San Mateo, California

Victor Levy  
President, FTD  
Victor's Flowers  
Lakewood, California

Robert Luczai  
Regional Floricultural  
Specialist  
Concord, Massachusetts

Y. K. Lum  
Y. K. Lum Corporation  
Honolulu, Hawaii

Bernie Lynch  
Lynch Brothers, Inc.  
New York, New York

Carl W. Magnuson  
President  
Florists' Publishing Company  
Chicago, Illinois

Frank W. Manker  
Manker's Quality Roses  
Long Island, New York

Mabel C. Markwood  
Roman J. Clapood Company  
Sun City, Florida

Paul Massaro  
General Manager  
Cut Flower Exchange, Inc.  
Sunnyvale, California

Andy Matsui  
Matsui Nursery Company  
Salinas, California

Richard Mayer  
Mayer's Flower Cottage  
Long Island, New York

Bill Mazzoni, Jr.  
Mazzoni Farms, Inc.  
Boynton Beach, Florida

Jim & Gen McCarthy  
Executive Secretaries  
North Central Florists  
Association  
St. Paul, Minnesota

Michael Melano  
Melano & Company  
San Luis Rey, California

Henry Meyers  
Meyers Cut Flowers  
Santa Barbara, California

Craig Millard  
Perishables Manager  
Viking Freight System  
Santa Clara, California

Ron Miwamide  
Economic Assistant  
Mt. Eden Nursery  
Mt. Eden, California

Erwin Mojonner  
Mojonnier Flowers  
Encinitas, California

Herman Moseley  
Gay Flowers  
Stuart, Florida

John Muller  
Daylight Nursery  
San Francisco Flower Market  
San Francisco, California

Roy Nagamine  
A. Nagamine Nursery, Inc.  
Watsonville, California

Jim Nakano  
H. Nakano & Sons  
Redwood City, California

Paul Nielsen  
C. J. Groen Rose Co.  
Santa Barbara, California

Dwight K. Nishimura  
Vice-President  
Golightly & Co. International,  
Inc.  
Houston, Texas

Ole Nissen  
Sunshine State Carnations  
Hobe Sound, Florida

Tom Oku  
Oku Inc.  
Pescadero, California

Clive Olson  
Olson's Greenhouses  
Rayham, Massachusetts

Joe Overgaard  
Hollandia Flowers  
Carpinteria, California

Genaro Payan Lopez  
Director  
Flores Del Rio S.A.  
Miami, Florida

Ted Piers  
Boston Flower Exchange  
Boston, Massachusetts

A. M. Pierson Wholesale  
Florists, Inc.  
Cromwell, Connecticut

William E. Pinchbeck  
William Pinchbeck, Inc.  
Guilford, Connecticut

Walter L. Preston  
President  
Manatee Fruit Company  
Palmetto, Florida

Ed Price  
California-Florida Plant Corp.  
Fremont, California

Protea Hills  
Escondido, California

David Pruitt  
Seacoast Greenhouses  
Leucadia, California

Mike Pudlo  
Plant Science Greenhouse  
Orlando, Florida

Jean Resnicoff  
Alpha Beta Supermarkets  
La Habra, California

Ronny Rinker  
Rinker Farms, Inc.  
Stuart, Florida

Don Rody  
Rocky Mountain Wholesale  
Florists, Inc.  
Commerce City, Colorado

Ronsley Florist  
Chicago, Illinois

Art Rosacker  
Floral Acres  
Delray Beach, Florida

Dick Rosacker  
Rosacker Plants  
Delray Beach, Florida

Don Rosacker  
Hans Rosacker Company  
Minneapolis, Minnesota

Jim Rose  
Manager  
Santa Barbara Orchid Estates  
Santa Barbara, California

William W. Rudolph  
Executive Vice President  
Bay State Florists Supply, Inc.  
Waltham, Massachusetts

Don Rust  
President  
Master Flowers, Inc.  
Miami, Florida

Marvin Saline  
Has Rosacker Company  
Minneapolis, Minnesota

Jibo Satow  
Satow Floral, Inc.  
Los Angeles, California

Tom Satow  
Satow Nursery  
Carpinteria, California

Paul Schneeberg, Jr.  
Schneeberg's Roses  
Long Island, New York

Warren Sharmat  
Marketing Manager  
Sunburst Farms, Inc.  
Miami, Florida

John D. Shelton  
Senior Vice-President  
Veldkamp's Flowers  
Golden, Colorado

Yoshimi Shibata  
Mt. Eden Nursery  
Mt. Eden, California

David M. Shinoda  
Manager  
San Lorenzo Nursery Company  
Santa Barbara, California

Dan Shypula  
President  
Riverdale Farms, Inc.  
Miami, Florida

Bert Silva  
Half Moon Bay, California

R. Richmond Smith  
Lone Palm Flowers of California  
Encinitas, California

Maurice Sourmany  
Manager  
Victor's Flowers  
Santa Barbara, California

David Squires  
Lafayette Florists & Greenhouses  
Lafayette, Colorado

Kelly Surprenant  
Chase Gardens Wholesale Florist  
Portland, Oregon

Mike Suyeyasu  
Vice President  
Bill Suyeyase  
Wholesale Florist, Inc.  
Sunnyvale, California

Tagawa Rose Farm  
Denver, Colorado

Louis Tamburo  
Golsner & Levine, Inc.  
New York, New York

Bill Taylor  
Stuart Cut Flowers  
Stuart, Florida

Arne Thirup  
President  
Pajaro Valley Greenhouses, Inc.  
Watsonville, California

Louis Thornton  
Thornton Wholesale Flowers  
Encinitas, California

John Thoughy  
2E Carnations  
Encinitas, California

Transcool Customshouse Broker  
Miami, Florida

Jun John Uchida  
General Manager  
Salinas-Carmel Greenhouses  
Salinas, California

Ernie Uyeda  
T. Uyeda Farm, Inc.  
San Jose, California

Jack & Peter Van de Wetering  
Ivy Acres, Inc.  
Calverton, L.I., New York

Curt Van Lonkhyzen  
Manager  
Vans, Inc.  
Chicago, Illinois

Jacob & Jack Van Namen  
President, and Vice President &  
General Manager, respectively  
Vans, Inc.  
Alsip, Illinois

Hank Van Wingerden  
Dutch Brothers  
Carpinteria, California

Alvaro Varela  
President  
Uniflora Corporation  
Miami, Florida

Paul Weidner Begonia Gardens  
Leucadia, California

Edgar Wells  
Los Floriales Colombinas  
Miami, Florida

Fred Wesemeyer  
A&W Glads, Inc.  
Ft. Myers, Florida

Donald E. Weston  
Leucadia, California

Dr. Harold F. Wilkins  
University of Minnesota  
St. Paul, Minnesota

Edward Wingrat  
President  
Greater Baltimore Allied  
Florists Association  
Stevenson, Maryland

Dick Wright  
President  
Utah Roses  
Sandy, Utah

Gerry Prince Young  
West Coast Representative  
Southern Florist and Nurseryman  
Van Nuys, California

Raymond G. Zacharias  
Manager, Grower Service Department  
Denver Wholesale Florists Company  
Denver, Colorado

John O. Zipperer  
Zipperer Farms  
Ft. Myers, Florida

APPENDIX C  
SUPPLEMENTARY DATA USED FOR  
ECONOMETRIC AND PRICE ANALYSES

Table C-1. Data Used in Elasticity Analyses Not Appearing Elsewhere

Year	Retail Florist Sales (\$ million)	Average Flower Arrangement Price		U.S. Population (Millions)	Consumer Price Index	Producer Price Index	Deflated Per Capita Income
		Nominal	Real				
1956	--	--	--	--	--	--	2,654
1957	--	--	--	--	--	--	2,658
1958	640	7.66	8.85	174.1	86.6	94.6	2,647
1959	--	--	--	177.1	87.3	94.8	2,696
1960	--	--	--	180.7	88.7	94.9	2,708
1961	--	--	--	183.7	89.6	94.5	2,742
1962	--	--	--	186.5	90.6	94.8	2,813
1963	850	8.48	9.25	189.2	91.7	94.5	2,866
1964	--	--	--	191.9	92.9	94.7	3,025
1965	--	--	--	194.3	94.5	96.6	3,171
1966	--	--	--	196.6	97.2	99.8	3,291
1967	1,100	9.38	9.38	198.7	100.0	100.0	3,387
1968	--	--	--	200.7	104.2	102.5	3,494
1969	--	--	--	202.7	109.8	106.5	3,566
1970	1,250	10.95	9.42	204.9	116.3	110.4	3,668
1971	1,375	11.34	9.35	207.1	121.1	114.0	3,762
1972	1,550	11.82	9.43	208.9	125.3	119.1	3,880
1973	1,685	12.46	9.36	210.4	133.1	134.7	4,112
1974	1,800	13.42	9.09	211.9	147.7	160.1	4,050
1975	2,000	14.19	8.80	213.6	161.2	174.9	4,099
1976	2,150	14.94	8.76	215.2	170.5	183.0	4,217
1977	2,250	15.79	8.70	216.9	181.5	194.2	4,334
1978	2,400	16.83	8.61	218.7	195.4	209.3	4,486
1979	2,600	--	--	220.6	217.4	235.6	4,585
1980	--	--	--	222.8	246.8	268.8	4,570

SOURCE: Retail Florist Sales and Nominal Average Flower Arrangement Prices, Fossum [1979]; Real price generated from Consumer Price Index; Population from U.S. Bureau of the Census, Current Population Estimates--Series P25 [various years]; Consumer and Producer Price Indices and Deflated Per Capita Income, USDA, Working Data for Demand Analysis [1981].

Table C-2. Regression Coefficients of Variables Used for the Analyses of Wholesale Cut Flower Demand

Dependent Variable	Intercept	TV	DV	IV	DVPT	DI	R <sup>2</sup>	MSE	F Statistic	n
<u>Standard Carnations</u>										
NP	-4.36452 (1.311149)	-0.0000202054 (0.00000402263)				0.00655505 (0.000963976)	0.8858	0.218087	46.52	15
NP	4.193238 (2.434868)		-0.000018928 (0.00000304151)	-0.0000116783 (0.00000401442)		0.004015553 (0.001060487)	0.9412	0.122554	58.64	15
NP	-8.741641 (6.441788)		-0.0000201996 (0.00000324369)		11.184701 (3.623717)	0.004737681 (0.001228147)	0.9442	0.116202	62.05	15
NP	10.553229 (5.193370)	-0.0000182785 (0.00000321673)			-5.909188 (2.016814)	0.003772106 (0.00120664)	0.9358	0.133627	53.48	15
RP	15.093431 (1.303008)	-0.000009423 (0.00000399789)				-0.00071987 (0.000908859)	0.8873	0.215413	47.25	15
RP	9.969509 (3.56319)		-0.000010188 (0.00000382303)	-0.0000145294 (0.00000504593)		0.0008389443 (0.001332981)	0.9072	0.193626	35.83	15
RP	-9.586450 (6.940373)		-0.0000133395 (0.00000349475)		15.950901 (3.904188)	0.0024083 (0.001423204)	0.9353	0.134886	53.02	15
RP	3.705122 (5.929738)	-0.0000108942 (0.00000367283)			4.511558 (2.302779)	0.001459436 (0.001380013)	0.9165	0.174207	40.23	15
<u>Miniature/Spray Carnations</u>										
NP	-0.315865 (0.747545)	0.00001994416 (0.00006406353)				0.0003548667 (0.000241103)	0.8658	0.004721402	32.27	13
RP	0.758173 (0.670536)	-0.000142759 (0.00065746398)				0.0001380561 (0.0002162656)	0.8769	0.003798749	35.63	13



Table C-2. Continued

Dependent Variable	Intercept	IV	DV	IV	DVPT	DI	R <sup>2</sup>	MSE	F Statistic	n
<u>Standard Chrysanthemums</u>										
RP	6.237210 (3.423797)	-0.0000684445 (0.00001688166)				0.006311641 (0.0005737709)	0.9231	0.843974	71.99	15
NP	16.589868 (6.473331)		-0.0000926482 (0.00002028945)	0.00001092721 (0.00004607301)		0.004250167 (0.00124421)	0.9410	0.706280	58.46	15
RP	16.944583 (12.592367)		-0.0000909942 (0.00001895803)		-0.945285 (7.712340)	0.004358264 (0.001332075)	0.9408	0.708923	58.23	15
RP	28.671188 (13.985797)	-0.0000786561 (0.00001609356)			-13.931545 (8.454441)	0.004233568 (0.001370543)	0.9383	0.738419	55.76	15
RP	41.473346 (5.704450)	-1.63448E-07 (0.0000279375)				-0.00669147 (0.0009559768)	0.8039	2.342861	24.60	15
RP	44.369523 (12.273729)		-0.0000069345 (0.00003846972)	0.00002204094 (0.00008735652)		-0.00726817 (0.002359079)	0.8052	2.539068	15.16	15
RP	46.776265 (23.854101)		-0.0000037057 (0.0000359122)		-3.019779 (14.609487)	-0.00721669 (0.00252335)	0.8048	2.543082	15.12	15
RP	47.037877 (25.962623)	-0.0000026964 (0.00003136047)			-3.455585 (15.694454)	-0.00720692 (0.002544216)	0.8048	2.544634	15.11	15

Table C-2. Continued

Dependent Variable	Intercept	TV	DV	IV	DWPT	DI	R <sup>2</sup>	MSE	F Statistic	n
Pompon Chrysanthemums										
HP	0.553719 (0.250665)	0.00000511495 (0.00000244362)				0.0002930379 (0.00009033942)	0.8882	0.001765341	47.68	15
HP	0.328373 (0.210462)		-0.0000137122 (0.00000668797)	0.00000111285 (0.0000023478)		0.0002584464 (0.0001054813)	0.9374	0.0007735099	54.87	15
HP	0.074977 (0.437762)		-0.0000175622 (0.0000546996)		0.068608 (0.182654)	0.0003448721 (0.000106597)	0.9369	0.0007793132	54.44	15
HP	0.509409 (0.598348)	0.00000550745 (0.0000054072)			0.031960 (0.388102)	0.00002047704 (0.00009435083)	0.8883	0.001379521	29.16	15
RP	1.183360 (0.380056)	-0.0000076175 (0.00000370803)				-0.0000503903 (0.0001369721)	0.8896	0.002908821	48.32	15
RP	0.996435 (0.397243)		-0.0000232346 (0.00001762342)	-0.0000109372 (0.00000443143)		0.000140513 (0.0001990939)	0.9041	0.002756696	34.56	15
RP	-0.710708 (0.640961)		-0.0000204516 (0.000003009)		1.108859 (0.267436)	0.000290332 (0.0001560768)	0.9418	0.001670703	59.39	15
RP	0.075214 (0.827944)	0.00000219856 (0.00000748203)			0.799291 (0.537023)	-0.0000460574 (0.0001305548)	0.9081	0.002641329	36.22	15

Table C-2. Continued

Dependent Variable	Intercept	TV	DV	IV	DVPT	DI	R <sup>2</sup>	MSE	F Statistic	n
<u>Gladioli</u>										
NP	-1.420111 (1.272669)	-0.000012515 (0.00000262001)				0.003270462 (0.0002307721)	0.9485	0.416411	193.55	24
RP	1.340671 (0.644260)	0.00000723158 (0.00000132632)				0.0006325638 (0.0001168232)	0.6524	0.106712	19.71	24
<u>Hybrid Tea Roses</u>										
NP	-35.189034 (4.446111)	0.00003738173 (0.00001140782)				0.010359 (0.0006199216)	0.9604	0.989243	145.46	15
NP	-9.757156 (7.028879)		-0.0000051873 (0.0000127229)	0.0001366656 (0.00002516831)		0.006890698 (0.0009323389)	0.9845	0.423050	232.45	15
NP	45.215784 (14.695013)		-0.0000070013 (0.00001191305)		-52.942011 (8.848707)	0.006485992 (0.0009102041)	0.9066	0.365998	269.25	15
NP	49.044391 (18.499399)	-0.0000078538 (0.00001192166)			-56.271797 (12.083265)	0.006424492 (0.0009245014)	0.9867	0.363162	271.38	15
RP	24.773670 (3.140559)	-0.000019751 (0.00000805727)				-0.0017559 (0.0004378466)	0.6498	0.493484	11.13	15
RP	35.759251 (7.045130)		-0.0000374435 (0.00001275232)	0.00002151322 (0.0000252265)		-0.00319721 (0.0009344945)	0.7235	0.425008	9.60	15
RP	43.785470 (15.859834)		-0.000037407 (0.00001285735)		-7.939744 (9.550112)	-0.00322544 (0.0009823527)	0.7227	0.426320	9.55	15
RP	58.066408 (20.108875)	-0.0000374203 (0.00001295887)			-21.980135 (13.134527)	-0.00329257 (0.001001934)	0.7209	0.429102	9.47	15

Table C-2. Continued

Dependent Variable	Intercept	TV	DV	IV	DVPT	D1	R <sup>2</sup>	MSE	F Statistic	n
Sweetheart/Miniature Roses										
NP	-12.151451 (5.801759)	-0.000087399 (0.00004186729)				0.008599178 (0.0008578981)	0.9111	1.216272	51.27	13
RP	15.190856 (2.040680)	-0.0000124793 (0.00001472618)				-0.00145391 (0.0003017526)	0.7111	0.150474	12.30	13

NP = Average nominal price

RP = Average real price

TV = Total volume

DV = Domestic volume

IV = Imported volume

DVPT = Percentage of total flower supply accounted for by domestic production

D1 = Deflated per capita income

R<sup>2</sup> = Coefficient of determination

MSE = Mean square error

n = Number of observations in the data set

Table C-3. Comparison of Average Monthly Wholesale Market and Shipping Point Prices for the Commodity Price Pattern Study, 1978-1980

Month	Carnation Prices				Chrysanthemum Prices			
	Standard		Miniature/Spray		Standard		Cushion Type Pompon	
	Wholesale	Shipping	Wholesale	Shipping	Wholesale	Shipping	Wholesale	Shipping
	(\$ per blossom)		(\$ per bunch)		(\$ per blossom)		(\$ per bunch)	
January	0.18550	0.12889	2.61531	1.89333	0.65824	0.36667	1.70300	1.16000
February	0.30000	0.19778	2.96333	2.09667	0.69474	0.38667	2.06476	1.32500
March	0.20900	0.13778	2.66161	1.72667	0.65526	0.35667	1.94217	1.31500
April	0.19650	0.12000	2.72323	1.74333	0.64118	0.32000	1.87217	1.27500
May	0.26050	0.17000	3.15250	2.10000	0.65529	0.32667	2.04870	1.36000
June	0.18500	0.11333	2.92464	1.76000	0.63412	0.31333	1.86524	1.26000
July	0.16684	0.08444	2.56720	1.25667	0.62235	0.28667	1.72059	1.04500
August	0.15947	0.08778	2.69520	1.53667	0.60842	0.28667	1.72500	1.01000
September	0.17412	0.10000	2.89320	1.75667	0.61474	0.29333	1.73471	1.08500
October	0.18812	0.11111	2.91148	1.87000	0.62316	0.33333	1.81588	1.22000
November	0.18950	0.12444	2.92300	2.01667	0.63700	0.36333	1.84120	1.23250
December	0.23278	0.15556	2.82667	2.16667	0.65750	0.35667	1.90654	1.21000

Table C-3. Continued

Month	Chrysanthemum Prices			Gladiolus Prices <sup>a</sup>		Rose Prices			
	Assorted Type Pompon			Wholesale	Shipping	Hybrid Tea		Sweetheart/Miniature	
	Wholesale	Shipping	(\$ per bunch)			Wholesale	Shipping	Wholesale	Shipping
January	2.07250	1.09400	(\$ per bunch)	2.92538	1.74000	0.73550	0.36333	0.35562	0.19667
February	2.31500	1.24200		3.08250	1.80000	1.05100	0.52333	0.51529	0.25333
March	2.23250	1.17500		2.78333	1.80000	0.66550	0.31333	0.35263	0.18000
April	2.21750	1.14600		2.48273	1.75000	0.60450	0.28333	0.37263	0.17333
May	2.29000	1.23200		3.00000	1.83333	0.67950	0.33667	0.44211	0.22000
June	2.20500	1.09778		2.96050	1.81667	0.56200	0.22667	0.33579	0.15333
July	2.10000	0.91571		2.61300	2.06667	0.46167	0.20000	0.23562	0.11667
August	2.08750	0.87857		1.80615	2.06667	0.52421	0.24333	0.23647	0.13333
September	2.14750	0.91143		1.84769	2.06667	0.56150	0.25667	0.23842	0.13333
October	2.16000	0.97143		2.69462	1.92000	0.56100	0.27000	0.24684	0.14000
November	2.17500	1.07000		3.00211	1.95000	0.57762	0.29667	0.24850	0.14333
December	2.19500	1.16750		2.96200	1.95000	0.64636	0.33667	0.31789	0.18333

<sup>a</sup>See text, Chapter V for explanation of irregularity in summer prices of gladioli.

APPENDIX D  
USDA PRODUCTION DATA ON CUT FLOWERS, 1956-1981

This appendix includes an updated version of Tables 4-1, 4-2, 4-5 and 4-7 (Tables D-1, D-2, D-3 and D-4, respectively). At the beginning of work on this dissertation, the Floriculture Crops data series only included data through 1979 with preliminary data for 1980. Since that time, final data for 1980 and data for 1981 have been released. As this series has been terminated, the complete data set is herein provided.



Table D-1. U.S. Domestic Production of Major Cut Flower Species: Number of Blooms, 1956-1981

Year	Number of States	Carnations <sup>a</sup>			Chrysanthemums			Roses <sup>b</sup>			Growers' Gross Sales <sup>b</sup>
		Standard	Miniature/ Spray	(1,000 bunches)	Standard	Poupin	Gladstol	Hybrid Tea	Miniature/ Sweetheart	(1,000 stems)	(1,000 blooms)
		(1,000 blooms)	(1,000 bunches)	(1,000 bunches)	(1,000 blooms)	(1,000 bunches)	(1,000 spikes)	(1,000 blooms)	(1,000 blooms)	(1,000 stems)	(1,000 blooms)
1956	4/5 <sup>c</sup>	--	--	--	(5) 31,463	(5) 10,577	(5) 215,496	--	(4) 126,943	--	1
1957	8/9/10 <sup>c</sup>	--	--	--	(10) 43,268	(10) 15,160	(10) 256,224	--	(8) 183,538	--	1
1958	10	--	--	--	47,897	14,885	213,372	--	182,665	--	1
1959	6	--	--	--	51,536	14,746	237,360	--	161,597	--	2
1960	--	--	--	--	--	--	--	--	--	--	--
1961	6	--	--	--	55,375	14,691	248,280	--	148,059	--	2
1962	6	--	--	--	59,505	15,108	254,532	--	153,988	--	2
1963	5	--	--	--	68,469	17,137	251,976	--	160,796	--	2
1964	11	--	--	--	96,976	22,127	302,268	--	274,519	--	2
1965	11	--	--	--	104,022	23,799	309,144	--	276,573	--	2
1966	23	--	--	--	133,688	28,433	343,428	--	363,172	--	2
1967	23	--	--	--	133,312	27,560	308,976	--	363,144	--	2
1968	23	570,427	1,614	130,869	30,997	30,997	336,960	309,882	98,972	--	2
1969	23	613,471	2,155	136,778	32,431	32,431	326,040	317,209	110,109	--	2
1970	23	619,052	2,539	147,000	32,431	32,431	290,320	308,713	130,152	--	2
1971	23	589,157	2,293	144,706	34,455	34,455	284,664	308,441	120,374	--	2
1972	23	584,395	3,002	137,144	33,649	33,649	273,244	309,596	122,007	--	2
1973	23	616,051	3,277	138,243	36,129	36,129	234,768	297,355	120,413	--	2
1974	22 <sup>d</sup>	601,768	3,874	144,042	37,864	37,864	223,361	319,161	123,653	--	10
1975	--	561,383	3,971	135,715	35,708	35,708	188,290	306,279	112,221	--	10
1976	28 <sup>e</sup>	517,080	4,736	140,397	35,603	35,603	181,162	307,584	114,609	14,889	10
1977	28 <sup>e</sup>	501,799	4,703	111,738	35,936	35,936	165,593	301,107	118,023	13,094	10
1978	28 <sup>e</sup>	466,363	4,736	124,424	37,892	37,892	148,926	306,806	112,449	11,902	10
1979	28 <sup>e</sup>	408,840	5,884	107,578	34,992	34,992	149,704	327,824	116,796	10,632	10
1980	28 <sup>e</sup>	379,375	5,881	93,753	34,900	34,900	146,602	313,631	112,036	10,568	10
1981	28 <sup>e</sup>	355,747	5,909	86,562	36,735	36,735	136,004	312,955	108,664	10,426	10

<sup>a</sup>Data for years 1956-1967 did not differentiate standard from miniature/spray carnations or hybrid tea from miniature/sweetheart roses.

<sup>b</sup>Growers are included if they have at least the listed amount or more in gross sales of cut flowers, flowering and foliage plants, bedding plants or cultivated florists' greens.

<sup>c</sup>Number of states surveyed for each species is indicated in parentheses next to data for 1956 and 1957.

<sup>d</sup>A variable number of states estimated to represent 95 percent of production for any crop.

<sup>e</sup>Twenty-eight states surveyed but only "major producing states" reported for any crop.

SOURCE: USDA, Crop Reporting Board [1957-1982].



Table D-3. U.S. Domestic Production of Major Cut Flower Species: Number of Producers, 1956-1981

Year	Number of States	Carnations <sup>a</sup>		Chrysanthemums <sup>a</sup>			Roses <sup>a</sup>			Anthuriums	Snapdragons	Growers, <sup>b</sup> Gross Sales <sup>b</sup>
		Standard	Miniature/ Spray	Standard	Pouppin	Gladioli	Hybrid Tea	Miniature/ Sweetheart				
1946	4/5 <sup>c</sup>	--	(4) 5/1	(5) 594	(5) 700	(5) 333	--	(4) 117	--	--	--	1
1957	8/9/10 <sup>c</sup>	--	(9) 1,401	(10) 1,744	(10) 1,923	(10) 671	--	(8) 222	--	--	--	1
1953	10	--	1,454	1,779	1,989	620	--	218	--	--	--	1
1959	6	--	917	1,029	1,245	425	--	176	--	--	--	2
1960	--	--	--	--	--	--	--	--	--	--	--	--
1961	6	--	877	1,026	1,158	340	--	151	--	--	--	2
1962	6	--	841	969	1,071	318	--	150	--	--	--	2
1963	5	--	761	864	927	261	--	138	--	--	--	2
1964	11	--	1,603	2,282	2,352	487	--	258	--	--	--	2
1965	11	--	1,709	2,150	2,196	453	--	251	--	--	--	2
1966	23	--	2,103	2,984	2,988	581	--	376	--	--	--	2
1967	23	--	2,055	2,756	2,733	541	--	376	--	--	--	2
1968	23	1,930	345	2,599	2,660	492	347	241	258	284	284	2
1969	23	1,804	390	2,457	2,497	398	360	268	266	237	237	2
1970	23	1,717	443	2,243	2,349	366	367	284	239	239	239	2
1971	23	1,525	378	2,134	2,168	321	323	266	231	231	231	2
1972	23	1,357	346	1,955	1,912	271	317	237	239	239	239	2
1973	23	1,198	298	1,804	1,796	269	316	239	231	231	231	2
1974	22	958	301	1,402	1,380	176	300	231	205	205	205	10
1975	-- <sup>d</sup>	594	210	1,119	1,278	87	256	205	192	192	192	10
1976	20 <sup>e</sup>	539	221	1,029	1,126	76	230	192	186	186	186	10
1977	20 <sup>e</sup>	503	217	990	1,154	82	237	192	619	619	619	48
1978	20 <sup>e</sup>	461	208	961	1,122	80	251	180	601	601	601	56
1979	20 <sup>e</sup>	418	200	829	1,001	69	236	177	528	528	528	67
1980	20 <sup>e</sup>	364	193	806	968	67	234	186	527	527	527	72
1981	20 <sup>e</sup>	331	177	724	894	58	222	177	503	503	503	74

<sup>a</sup>Data for years 1956-1967 did not differentiate standard from miniature/spray carnations or hybrid tea from miniature/sweetheart roses.

<sup>b</sup>Growers are included if they have at least the listed amount or more in gross sales of cut flowers, flowering and foliage plants, bedding plants or cultivated florists' greens.

<sup>c</sup>Number of states surveyed for each species is indicated in parentheses next to data for 1956 and 1957.

<sup>d</sup>A variable number of states estimated to represent 95 percent of production for any crop.

<sup>e</sup>Twenty-eight states surveyed but only "as for producing states" reported for any crop.

SOURCE: USDA, Crop Reporting Board [1957-1982].

Table D-4. U.S. Domestic Production of Major Cut Flower Species: Production Area, 1,000 Square Feet (Gladioli in Acres), 1975-1981

Year <sup>a</sup>	Number of States <sup>b</sup>	Carnations <sup>c</sup>		Chrysanthemums <sup>c</sup>		Gaidioli <sup>c</sup>	Roses <sup>c</sup>		Snapdragons <sup>c</sup>	Anthuriums <sup>c</sup>	Growers' Gross Sales <sup>d</sup>
		Standard	Miniature/ Spray	Standard	Pompon		Hybrid Tea	Miniature/ Sweetheart			
1975	95 <sup>c</sup>	28,789	2,522	23,421	40,655	9,320	23,470	5,048	--	--	> 10
1976	23	28,768	2,706	22,441	37,412	8,310	23,420	5,240	2,472	--	> 10
1977	23	27,549	3,143	19,327	37,389	7,839	--	--	2,300	--	> 10
1978	28	25,276	3,118	23,429	39,966	7,371	22,349	--	2,074	8,630	> 10
1979	28	24,555	3,586	17,268	37,503	7,120	22,937	5,234	1,747	10,745	> 10
1980	23	20,800	4,184	14,768	31,587	6,183	23,595	5,665	1,862	11,869	> 10
1981	23	20,249	4,323	14,561	30,480	5,205	22,921	5,477	1,962	14,024	> 10
								5,071		15,661	> 10

<sup>a</sup>Unavailable for previous years except for acres of gladioli.

<sup>b</sup>This includes whatever number of states are needed to account for the major share of the production (95% in 1975) for any species, although 28 states were surveyed.

<sup>c</sup>All areas are in 1,000 square feet except for gladioli which are measured in acres. Areas cultivated under multiple cropping techniques for the same crop are listed only once. However, multiple cropping for different crops finds the area listed under each crop grown.

<sup>d</sup>Growers are included if they have sales of \$10,000 or more in gross sales of cut flowers, flowering and foliage plants, bedding plants or cultivated florists' greens.

SOURCE: USDA, Crop Reporting Board, Floriculture Crops [1976-1982].

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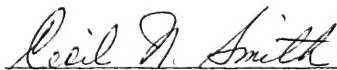
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## BIOGRAPHICAL SKETCH

Marvin Neal Miller was born to David I. and Beatrice S. Miller on August 29, 1953, in Bloomington, Indiana. Just before his sixth birthday, the author moved with his family to Baltimore, Maryland, where he was raised. The author graduated from Gilman School in 1971.

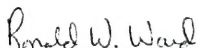
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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



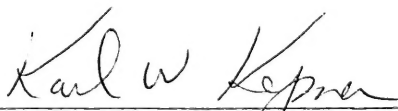
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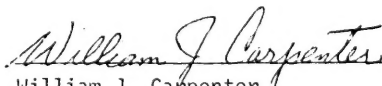
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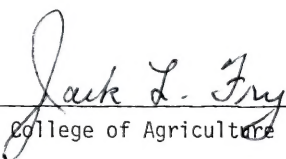
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